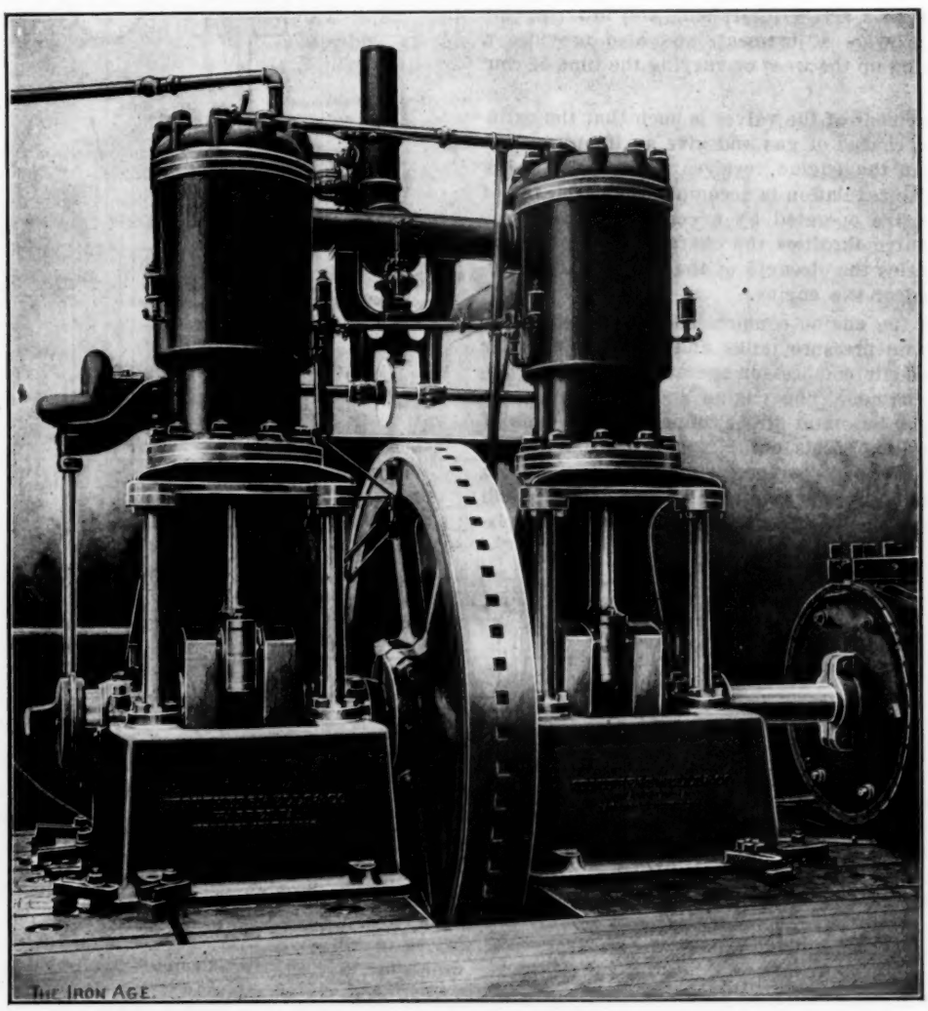
THE IRON AGE

THURSDAY, SEPTEMBER 19, 1901.

Machinery at the Pan-American Exposition.—IX.

Struthers, Wells & Co.

The gas engine exhibited by Struthers, Wells & Co. of Warren, Pa., is of the four-cycle vertical type, with two cylinders 21 inches in diameter by 24 inches stroke. The cylinders are set about 6 feet apart, center to center, and supported and attached to the engine bed by two semicircular castings and four wrought steel columns. The connecting castings and columns are securely bolted to the cylinders and bed, all forming together a very substantial and rigid frame.



The Warren Gas Engine.

MACHINERY AT THE PAN-AMERICAN EXPOSITION.

The pistons are attached to the crank shaft by connecting rods, Fig. 2, of forged steel, finished all over. Each rod has a heavy bolted flange joint near the piston end and can easily be detached and taken apart, so that the pistons can be removed from the cylinders without disturbing the cylinder heads and their attached connections.

The double throw crank shaft is a solid forging of open hearth steel, 9 inches diameter at main bearings, 11½ inches diameter in the center where the fly wheel is carried and 15 feet 9½ inches long over all. The shaft extends to one side of the engine and is supported at its outer end by a heavy cast iron ring oiling floor stand.

The fly wheel is carried on the crank shaft midway between the center line of the cylinders. It is 8 feet 6 inches in diameter and is split at rim and hub for convenience in handling. This wheel weighs 12,000 pounds, sufficient to insure smooth and easy running to the engine.

Each cylinder head and its valve chest are cast in one piece, thus doing away with any packed joints between. The valves are of the poppet type, with vertical lift, and are located in the valve chests, which are fitted with bolted covers with ground joints, permitting easy access to the valves and valve chests for cleaning and regrinding.

The cylinders, cylinder heads, valve chests and mixing chambers are water jacketed. The arrangement of the jackets and water inlets and outlets is such as to insure perfect and equal circulation around the parts which are in contact with the heat of the explosions.

The opening of the valves is accomplished by cams, Fig. 4, operating on a shaft which is driven from the crank shaft of the engine by means of gearing and an intermediate shaft. This shaft operates the valves for

both cylinders, and in addition carries two eccentrics which furnish motion to the mechanisms of the electric igniters. The closing of the valves is accomplished by spiral springs around the valve stems, and valve stems are fitted with cross heads, working in adjustable guides, to insure true alignment of valves.

The electric igniter is of the make and break type, and the construction is such that the point of ignition can be changed as desired to secure the best results. The variation in the time of ignition is accomplished by means of a self locking screw which lowers or raises the point of the trip which operates the circuit breaker. This trip rod is operated by an eccentric on the horizontal side shaft. An igniting plug, Fig. 3, in the cylinder head contains the terminal rod for the electric spark, and also a current breaker, which is turned against the terminal rod by means of the trip rod coming in contact with an arm on the outer end of the current breaker. After the contact is made a coil spring on the outer end of the current breaker snaps the arm off the point of the trip rod and ignition takes place. The construction of the trip rod with a screw for raising and lowering the point allows a wide adjustment, and also provides a means for taking up the wear or varying the time of contact.

The arrangement of the valves is such that the cylinders take in a charge of gas and give an impulse alternately, so that the engine receives an impulse every revolution. The regulation is accomplished by means of a throttling valve operated by a centrifugal ball governor. This valve throttles the charge of both air and gas, which varies the strength of the impulse and regulates the speed of the engine.

In starting the engine compressed air is used. This is obtained from pressure tanks and a double cylinder water jacketed air compressor operated by a small 3½ horse-power engine. The engine and compressor are mounted on one base and direct connected by means of a clutch coupling. This outfit is part of the regular equipment of the large engine. To facilitate starting a secondary cam is brought into play by throwing a small lever. This cam opens the exhaust valve, when the piston is on the compression stroke, far enough to relieve the high pressure in the explosion chamber, and to insure the easy and certain starting of the engine. It can be as readily thrown out of play after the engine is in motion, when the valves remain closed. A compression of 100 pounds to the square inch is then obtained in the explosion chamber.

The engine is a radical change from the other gas engines, and possesses many features which the manufacturers claim are decided improvements. It was designed by Chas. Jacobson, who has been closely connected with the building of gas engines for a number of years, both in this country and in Europe. It was one of the first engines to be started in the Power Court, and is furnishing power, in company with the other engines installed there, to the pumps that deliver water to the fountains and lakes of the exposition grounds. It is in operation from 10.30 a.m. until 10.30 p.m. during week days and Sundays, and, with the exception of a few days' shut down caused by the breaking of the friction clutch driving pulley on the extension shaft of the engine, its service has been continuous, delivering about 250 horse-power to the driving belt. The breaking of the clutch pulley and the consequent shut down to the engine was primarily due to a weakness in the 72-inch pulley on the large pump which the engine was driving.

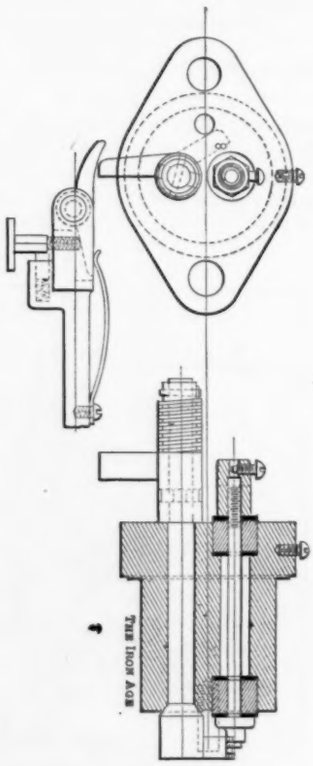


Fig. 3.—Igniter.

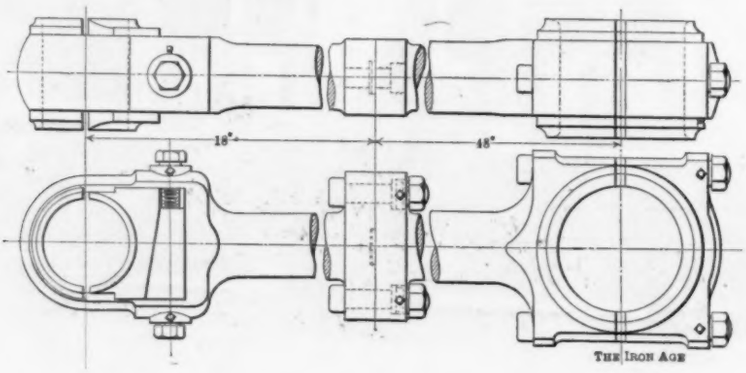


Fig. 2.—Connecting Rod.

MACHINERY AT THE PAN-AMERICAN EXPOSITION.

A preliminary statement giving the status of the manufacturing interests of the State of Connecticut and of the principal industrial centers of that State, shows that there were 9128 manufacturing establishments in the State, with a total product of $352,824,106. The capital employed was $314,696,736, an increase of 38 per cent. over 1890; the total wages paid was $82,767,725, an increase of 24 per cent.; cost of material used, $185,641,219. The increase in establishments for the State amounted to 33 per cent., and of production to 42 per cent. The Bridgeport output was $37,883,721, with 832 establishments; of Hartford $31,145,715, with 888 estab-

lishments; of New Britain $12,260,782, with 226 establishments; of New Haven $40,762,015, with 1236 establishments; of Waterbury $33,778,905, with 404 establishments. Of the cities Waterbury showed the greatest gain, or 90.7 per cent. over 1890.

The Report on the Brooklyn Bridge.

Immediately after the accident to the Brooklyn Bridge last summer, when several of the suspender connections gave way, District Attorney Philbin appointed an expert engineer to examine the structure and report upon its exact condition. The report has been finished, but Mr. Philbin does not deem it advisable to make it public at the present time. It will be submitted to other eminent bridge engineers, and their advice obtained as to what should be done. The report is as follows:

"It is signed by E. Duryea, Jr., and Joseph Meyer, who have been engaged in making an examination of the bridge and the plans for nearly two months. The District Attorney does not think it advisable, at the present time, to make public the full report, but feels that something should be said as to the safety of the bridge.

"The conclusions of the engineers on that point can be best indicated by the following language in their report:

"'We believe the present margin of safety to be so small that the necessity for repairs is very urgent, and have suggested means by which the safety can be increased without materially interfering with traffic, and at comparatively small cost.'

"It was further stated by Messrs. Duryea and Meyer to the District Attorney that the margin of safety will be increased by the absence of hot weather. It will be remembered that the recent accidents and the one that happened in 1898 occurred when the temperature was very high.

"Mr. Meyer, who co-operated with Mr. Duryea in the examination, has been engaged in the construction of many large suspension bridges, and was recently employed in relation to the design for the proposed Hudson River Bridge at Fifty-ninth street. It is said that he is probably without an equal in the computation relative to the designing of suspension bridges. Practically all the mathematical computation and the results were made by Mr. Meyer, Mr. Duryea having devoted his attention to all the other questions of construction, besides, of course, co-operating with Mr. Meyer and verifying the latter's results."

From this it will be seen that the bridge has a small margin of safety, a result brought about by deterioration or overloading, or, what is more probable, a combination of both. Engineers will be most interested in the extent of the reduction in the factor of safety and in the means advised for increasing the safety.

The Pressed Steel Car Company.

The shipments of the Pressed Steel Car Company of Pittsburgh still keep above the 100 per day mark. During the week ending September 13 the company shipped 628 cars, an average of 105 cars per day. The company are also making large shipments of truck frames, bolsters, brake beams and other pressed steel specialties. Some interesting statistics in regard to the work done by the Pressed Steel Car Company have recently been compiled. The enormous quantity of the work done can best be realized when it is known that the company are the largest single users of steel in the world. The kind of steel used is what is known as the medium soft Carnegie, and the company use on an average over 1600 tons of steel a day, or over 500,000 tons per year. Another interesting calculation is that in the four years during which the manufacture of pressed steel cars has been carried on, up to September 1, 1901, the Pressed Steel Car company have used about 828,540 net tons of iron and steel in the construction of the 46,030 cars which they have built. If these cars were placed end to end, allowing 35 feet as the average length of the car and 2 feet for the couplings, they would form a continuous train over 322 miles in length. These cars would carry about 2,301,500 net tons of freight, and the weight of the freight and cars combined would be about 3,130,040 net tons.

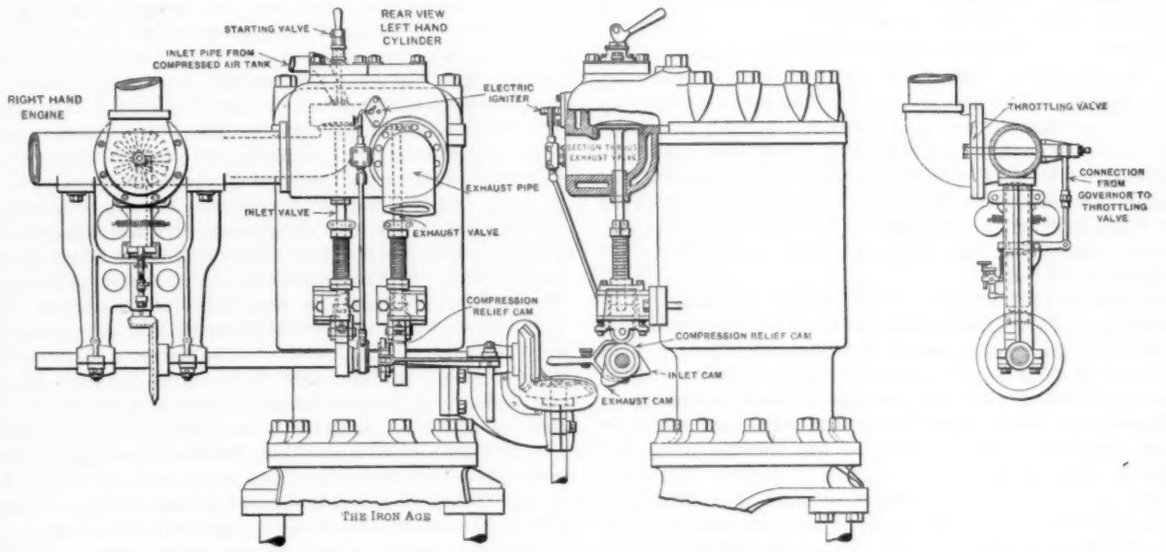


Fig. 4.—View Between Cylinders, Showing Governor and Valves.

MACHINERY AT THE PAN-AMERICAN EXPOSITION.

A letter from Lieutenant Peary, just published, shows that he succeeded in reaching a point further north than any other explorer who has worked on this side of the globe. But more important than this is the fact that he accomplished the mapping of the northern coast of Greenland. He found that the great island did not extend nearly as far north as had been supposed. Lieutenant Peary stays north another year.

Still again the art of tempering copper has been discovered, this time by a resident 'way down in Maine. As usual, he has been experimenting for years and has experienced all the customary drawbacks. Report has it that he has exhibited a copper hatchet with an edge apparently as keen and strong as steel, also a stone chisel and several broadswords.

The Industrial Commission.

Additional Evidence.

WASHINGTON, September 17, 1901.—The interesting fact has developed that the Federal Industrial Commission, in its investigation of the leading industrial combinations of the country, has not contented itself with having the oral testimony of such witnesses as could be induced to come before it in Washington and in other cities that have been visited, but has secured written statements in the form of sworn affidavits from the principal officials of a number of important corporations in response to categorical written interrogatories. Among these corporations are the Orford Copper Company, the American Bicycle Company and the Otis Elevator Company, all of which have submitted interesting statements concerning the business reasons which induced the constituent companies to combine, the economies which it was proposed to effect, the result secured in the way of increased efficiency, higher or lower prices of output, extension of export trade, attitude toward union labor, financial success, &c., and finally, whether the present tariff is necessary to the continued success of the industry in question.

Orford Copper Company.

The affidavit submitted by President Robert M. Thompson of the Orford Copper Company declares at the outset that the company are not a consolidation and are not in a combination with any other company. The affidavit, which is specially interesting because of the comments contained therein relative to the testimony of Chas. J. Harrah, president of the Midvale Steel Company, concerning the recent increase in the price of nickel, is as follows:

"The Orford Copper Company are engaged in the refining and selling of nickel and copper. I am the sole owner of the stock, except 20 shares, which are held by four other persons, in order to enable them to qualify as directors. I have no interest in any nickel mine. There is no nickel mine in the United States which is now productive. My works for the refining of nickel are on New York Harbor. I have a branch establishment in Canada for treating low grade materials and bringing them to a higher grade. The Orford Company have existed about 20 years. The business was established under the name of the Orford Nickel & Copper Company in 1877. My company are not the result of a combination and are not in a combination with any other concern.

"There is only one other refiner of nickel in the United States, Joseph Wharton of Philadelphia. Mr. Wharton formerly owned a nickel mine at the Delaware Water Gap, but this mine is no longer productive. He is now dependent on the same sources of supply as I. Nickel ore is brought to the United States from Canada, New Caledonia and Norway.

"In 1899 and 1900 the consumption of nickel increased enormously, along with the consumption of iron and steel. At the same time there was a great falling off in the supply from the source which is most accessible to the United States. The Canadian mines had almost entirely supplied the United States market. Certain mines in Canada fell off largely in their production; development work has been pushed since, and I anticipate a renewed supply from Canada, though a sufficient amount of ore to supply the demand is not yet in sight. In the mean time we are dependent on the New Caledonian and Norwegian ores. The freight on ore from New Caledonia fully doubled from 1898 to 1900, partly as a result of the wars in South Africa and China. This also was a temporary condition, and the freight is now not much higher than in 1898. It contributes largely, however, to the increased cost of nickel in the United States in 1900.

"Charles J. Harrah, in his testimony before the Industrial Commission, complains of an increase in the price of nickel, which affected him in the spring of 1900, and which he regards as arbitrary. The circumstances which I have mentioned indicate in part why the cost of nickel to the refiners was far greater in the spring of 1900 than a year or two earlier. Other things worked in the same direction. Coke cost me 60 per cent. more in the spring of 1900 than in the spring of 1899, and coal 35 per cent. more. In reality, however, the primary cause of the increased price is an enormous increase of demand, far outrunning the supply. The increase which Mr. Harrah complains of was up to 40 cents, though, if he is correctly reported, he said, by mistake, 42 cents. At the present moment the price of nickel of large quantities is 50 cents, and I have none to sell at any price. Both Mr. Wharton and I are far behind in deliveries on all our contracts, except on those with customers who supply the United States Government. We protect them at all hazards and to the exclusion of every one else.

"The facts in the case of Mr. Harrah are that he buys nickel on yearly contracts, as most large buyers do. Up to April, 1900, he had been supplied on the terms of a contract made in the preceding spring. He had not kept track of the market. The market price rose to 40 cents at least as early as January, 1900. When the time came to renew his contract and he was told what the price was it came to him as a surprise. Neither this price nor the price of nickel at present is the result of any combination or agreement. I wish particularly to correct Mr. Harrah's statement that the price of nickel is determined in London by an international combination. In reality, there are at least four competing sellers in England and at least five on the Continent—in France, Germany and Austria. These dealers are entirely independent, and so far as I know there is no combination between any two of them, or between any of them and the American refiners. So far from being bound together by any agreement, they are engaged in throat cutting competition. The relations between them are strained. So far as the price of nickel in this country is determined by any one, it is determined by Mr. Wharton and me. My relations with Mr. Wharton are very friendly, and we often consult together about business. There is no agreement between us, however, as to the amount to be sold or as to prices, except that at times I sell him partially refined nickel and at times buy refined nickel from him. Each of us is perfectly free to sell any amount, at any price, to anybody. We do not control the whole United States market; a considerable amount of nickel is imported. The ores used by foreign refiners come from the same mines as those used by us, except that we monopolize the Canadian product."

American Bicycle Company.

The affidavit on behalf of the American Bicycle Company is signed by Vice-President George Pope, and is as follows:

"The American Bicycle Company were incorporated on May 12, 1899. Their business is the manufacture of bicycles and automobiles. They bought the property of 48 concerns who had been engaged in making bicycles and bicycle parts. They did not buy the stock of previously existing corporations, but took conveyance of their real estate and personal property. The organization of the company was the work of A. G. Spalding. He personally bought the properties from the previous owners on such terms as he could make by private arrangement and sold them to the American Bicycle Company.

"The amount paid by Mr. Spalding for each plant was a private matter between him and the former owners, and was not known to the owners of the other plants. I believe, however, that the method and terms of payment were similar in all cases. The owners received in each case 30 per cent. of the appraised value of their property in cash, or, at their option, in 5 per cent. debenture bonds of the American Bicycle Company, at 92½; 30 per cent. of the appraised value in preferred stock of the American Bicycle Company, and 50 per cent. in common stock. Speaking roughly, the debentures and preferred stock represented the physical assets of all kinds, and the common stock represented the intangible assets, including patents, good will, &c.

"The plants were appraised for the purpose of purchase by the American Bicycle Company by the Ameri-

can Appraisal Company of Milwaukee, and their value fixed at more than $9,000,000. The books, accounts receivable, &c., were gone over and valued by a chartered accountant, who had been auditor of the National Board of Trade of Cycle Manufacturers, and their value fixed at more than $7,500,000. All these valuations were made as of the date of the last annual inventories of the several companies, which were generally made in the later months of 1898.

"The plants were taken over by the new company near the end of 1899. The net earnings, made in the interval, were estimated at over $3,500,000. This sum, added to the estimated values of the properties at the times of the last inventories, gave an estimated cash value of the total assets of more than $20,000,000. The authorized capital of the American Bicycle Company is $35,000,000 preferred and $45,000,000 common stock, of which has been issued $10,000,000 preferred and $20,000,000 common stock, and there has also been issued $10,000,000 5 per cent. 20-year debentures. The debentures were underwritten at 92½ and were taken at that rate by the underwriters, so far as they were not taken in payment for property bought. When the promoter had turned over to the sellers of the property so much of the preferred and common stock as was required by his bargains with them, the remainder was left in his hands as profit.

"The earnings of the properties before consolidation were stated to have been, in 1895, about $5,119,000; in 1896, about $7,763,000; in 1898, about $3,329,000. The net profits for 1899 were estimated at $3,894,000.

"The chief reason for desiring the consolidation was, perhaps, the great increase of competition in the trade. The business had been very profitable up to 1895, and in that and the following years a great number of new people embarked in the business. Many of them had no adequate capital. They went in expecting to make up their machines and sell them and get their money back in two or three months. They found that this could not be done. They were pressed for money, and they or their competitors were compelled to throw their machines on the market and get cash out of them, even if they got no profit. It is true that the strongest concerns in the trade still made some money every year, but with the constant and increasing cutting of prices a condition was approaching in which it was feared that even the strongest could make no profit. There was no cohesion in the trade as there is in some older trades. There had been a Bicycle Board of Trade, but it had gone to pieces. Competition was of the cut-throat order. No doubt the example of the combinations that were forming in all kinds of business had also a great influence on the course of the bicycle makers.

"There are, however, important direct savings which the consolidation of ownership and management has effected. Important and expensive patent suits were pending between the different manufacturers. The introduction of community of interest with common ownership put a stop to much patent litigation. There was also some further gain in permitting valuable patents owned by any one concern to be applied by all.

"There is an important saving in administrative expenses from the diminution of the number of officers. Each factory had formerly its complete executive organization, usually a president, a vice-president, a secretary and a treasurer. These officers are all replaced now by a single manager; the full executive organization exists only at the central office. All buying is concentrated in the hands of one officer and his assistants. This not only saves energy and expense, as compared with the former system of independent buying for each plant, but it also enables the company to get the very lowest prices. There is a further saving in carrying a smaller aggregate quantity of supplies than was formerly carried by all the factories together. Centralized management of distribution makes this possible. By this means interest and depreciation of stock on hand are saved.

"Concentration of manufacturing activity has reduced the actual cost of production. The company have closed eight bicycle plants, besides turning two from the production of bicycles to the production of automobiles. At first thought it may seem that this saving is gained at the expense, in some degree, of the men formerly employed at the closed plants; but I am confident that if the American Bicycle Company had not been formed quite as many plants would have been closed through the failure of the companies who owned them. Moreover, while it is true that the men at the plants which have been closed had to go into other employment, the plants have been sold or leased and are used for other purposes, and men are still employed there. Without regard to this consideration, I believe that about as many days' work are given in a year by the American Bicycle Company as were given by their predecessors. The employment is steadier. Before the consolidation there was much temporary shutting down on account of the excessive capacity of the plants. The factories would run full, and perhaps work overtime in the winter, but during the summer they would be almost idle. We have not been able to altogether do away with this condition, but are trying to make arrangements so that we can run pretty steadily throughout the year. Steady running is better for the employer as well as for the employee. If a factory turns off a large part of its force in the spring or early summer, it can get back only a part of the old men in the fall. It has to take on new men and teach them, and teaching new men is an expensive and wasteful business.

"The expense of selling has been considerably reduced by the consolidation. The American Bicycle Company advertise freely, but on account of the enormous size of their advertising contracts are able to get very low rates; even lower rates than the Pope Mfg. Company and the Gormully & Jeffrey Mfg. Company obtained, and they bought advertising at lower rates than any others established in the business. There has been some diminution of the number of traveling men. The company now employ in the busy season about 85 per cent. of the number employed before the consolidation.

"I believe that the efficiency of management is higher than before, because it is the policy of the company to pay good salaries and to select the best men and hold them. There is a manager at the head of each factory and a manager at the head of each of the nine sales departments. The factory manager is responsible for the production of goods. He has absolute authority in running the factory. He makes his record on economy of running, together with the quality of goods turned out. The sales manager receives goods assigned to him from certain factories, the selling price being determined by the Board of Directors. He hires his own salesmen and conducts the sale of his own goods. He makes his record on the quantity of goods sold. The company make comparison of the results obtained at different factories, and base upon the results an estimate of the efficiency of the several managers.

"There has been no change during the last two years in the price of 'agency goods'—that is, bicycles which are marketed through established retail agencies. On jobbing goods there is a tendency to stronger prices. The cutting of prices which resulted from the severe competition has been stopped. The company, therefore, still make their special lines of goods at specially low prices for mail order houses.

"I suppose that the American Bicycle Company sold about 65 per cent. of all the bicycles sold in the United States in 1900; but this is scarcely more than a guess. There are many small shops which buy a few parts and put together a few bicycles during the winter—5, 10, 50 or 100. The aggregate amount of this kind of manufacture is considerable, but it cannot be closely estimated.

"Our export trade is attaining considerable importance. The bicycles exported are mostly of the better grade, and many of them have even better and more expensive equipment than is used here, and on this account are sold at actually higher prices. In general, our export prices are based substantially on wholesale prices in this country.

"There has been no general change of wages since the American Bicycle Company were formed. The executive officers have taken no action on the subject, but have left it entirely to the local managers. The subject of trade unions has been treated in the same way. Even when the local managers have consulted the central office on this point they have been told that their attitude toward labor organizations is considered to be a matter for their own determination in their character as managers. Some of our shops are union and some are nonunion.

"The tariff has no effect upon our business that we are conscious of. We would not turn a hand over to prevent the repeal of the duty on bicycles.

"The automobile business is in such an undeveloped state that very little can be said upon it. The manufacture of automobiles is conducted by this company in separate factories, and the selling of them is also confided to separate agencies."

The Otis Elevator Company.

President William D. Baldwin of the Otis Elevator Company makes the following statement on behalf of that corporation:

"The Otis Elevator Company were formed under the laws of New Jersey in November, 1898, to manufacture elevators and hoisting machinery. The company bought the property of 11 companies, which were doing 80 or 85 per cent. of the elevator business in the United States. I think the proportion of the total business done by the Otis Elevator Company has rather increased since their organization.

"I was myself the promoter or organizer of the new company. I had been for many years in the business, and was treasurer and general manager of Otis Brothers & Co., the principal concern in the trade. I personally bought the property of each of the existing companies by private arrangement, and sold the combined properties to the new company. The terms of purchase of each concern were, however, known to the others. Since the arrangements were all by private agreement, there was no committee of appraisal or similar machinery. No stock was offered to the public, and, therefore, there was no underwriting syndicate. I personally agreed to sell some of the stock to about a dozen people. Payment was made for all the plants in stock exclusively, except that one was paid for in cash. Each selling company received an amount of preferred stock which was believed to represent the fair cash value of the physical property. Common stock was given in addition, in the proportion of one and one-half shares of common to one of preferred, in payment for intangible property, including patents, trade-marks, brands and good will. The prosperity of an elevator business is largely dependent on good will—that is, on an established reputation. It is very difficult for a new concern to establish itself and get business in the face of a long existing institution with a well-known name. People do not readily make experiments in buying apparatus to which thousands of people are to trust their lives. The most of the companies whom the Otis Elevator Company bought out had been a considerable number of years in business and had acquired reputations which had a very great value.

"One of the principal economies effected by the consolidation results from the specialization of the work at the different plants, and the building of particular types of machinery in larger lots. Twenty-five machines of a particular type at one time and place can be built much cheaper than five. By a rearrangement of the manufacture in this way it is possible, without sacrificing excellence of construction or safety, to lower the cost of production. Only one factory has been closed, but each is confined, so far as possible, to particular specialties. The business as a whole has grown, and this has enabled us to make fuller use of the facilities of each plant.

"I believe that the number of traveling men is about the same as before the consolidation; but the same number of men handle a business about 20 per cent. larger.

"The common use of patents previously owned by single establishments has been of advantage to the consolidation, but the principal advantage gained in connection with patents is the stopping of litigation. This had been an important source of expense.

"Our prices since consolidation have been no higher than the prices charged before consolidation by Otis Brothers & Co. They have undoubtedly been higher than some of the prices which were made by some of the other companies. I believe, however, that this increased price has been accompanied with an improvement in the quality of the goods.

"Our exports are assuming considerable proportions. Our machines which go abroad are shipped chiefly to the Otis Elevator Company, Limited, of London, a separate, although allied, organization. We bill the machines to this company on about the same basis of price as to our selling offices in the United States—that is, at a price which includes a fair manufacturing profit. Our policy throughout is to separate the department of sales from that of manufacturing, and to credit the merchandising profit to the one and the manufacturing profit to the other. We have no control over the prices charged to consumers by the Otis Elevator Company, Limited, of London. The elevators exported are of a cheaper grade than those sold in the United States. They are slow moving, not over 100 feet a minute, while those used in this country generally move from 200 to 600 feet per minute. The cars also are cheaply constructed so far as matters of appearance go.

"We have numerous offices throughout the country engaged in selling our products and buying the necessary material.

"There has been no noticeable change of wages per day since the Otis Elevator Company were formed, but we are just putting all our factory men on the nine-hour basis, with the same daily wages which were formerly paid for ten hours. The attitude of the company toward labor organizations is entirely friendly. The condition of our shops in regard to organization of labor is not, however, uniform. Some of the shops are union and some are not. A large part of our men belong to the International Association of Machinists, and many of the men engaged in erection belong to the local unions of their trades. Our relations with the unions are very pleasant, and all our men are free to join the unions or not, as they please. The company belong to the National Metal Trades Association, and I believe the best hope of industrial peace is in the establishment of organizations of employers and organizations of workmen. If all the employers in any particular business and all the workmen in the same business were organized all controversies would be speedily settled fairly, and no one employer or workman would profit at the expense of his fellows.

"The tariff does not affect the business of our company in any way that we are conscious of."

The members of the Industrial Commission regard these affidavits as specially significant in that those of the signers who discuss the effect of the tariff upon their products express their indifference with regard to its retention.

The Commission is now engaged in drafting its recommendations to Congress with regard to legislation for the control of the so-called trusts, but great difficulty is being experienced in bringing a majority of the Commission to one way of thinking with regard to any measure of importance. The Commission will doubtless recommend increased publicity for corporations doing an interstate business. The appointment of a federal officer whose business it shall be to see that the provisions of the proposed statute are not evaded is also under consideration. Certain members of the Commission are disposed to favor a constitutional amendment giving Congress control of all manufacturing corporations except for the purpose of taxation, but the difficulty of inducing the States to accept such an amendment is regarded by other members as an insuperable objection. The Commission's final report on the trusts, together with such suggestions as may be decided upon, will be forwarded to Congress December 15.

W. L. C.

Wages in England.

The annual report of the labor department of the British Board of Trade for the year 1900 shows that year to have been the culminating period in the upward movement which began in 1896. The official Labor Commissioner states:

"Not only did the general level of wages in the United Kingdom stand higher at the end of 1900 than in any other year for which statistics exist, but the rate of increase during last year was unprecedentedly high. If we confine ourselves to the industries for which it is possible to obtain definite statistics, we find that no fewer than 1,112,684 work people, or about one-seventh of the total employed, received advances during the year amounting to no less than £212,000 per week, while only 23,010 sustained decreases to the unimportant amount of £2800 per week. The net weekly rise of £209,000 compares with £91,000 in 1899 and £81,000 in 1898.

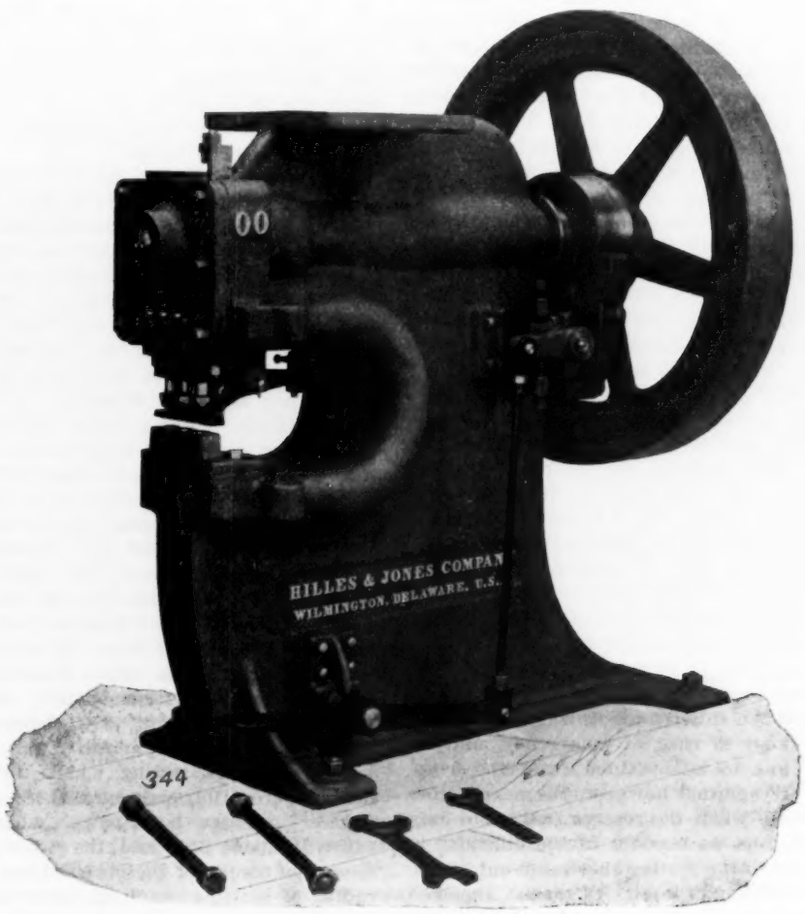
"As in the two previous years, by far the larger amount of the increase is accounted for by the rise of miners' wages, which rose on the average nearly 4 shillings 5 pence per week in the course of the year, and accounted for £168,000, or 80 per cent. of the total weekly increase of wages. Taking into account the various dates at which the changes came into operation, it is estimated that the additional amount disbursed in wages during 1900, occasioned solely by the increase of wages recorded in this report, apart from any change in the number of the working population, was not less than £6,000,000."

Writing, however, in July last, he has to record that the first half of the present year has accorded with the signs which were not wanting toward the end of 1900 that the period of rising wages was drawing to a close. The increases of wages, though still more widespread than the decreases, have not balanced them in amount, so that for the first time since 1895 the net effect has been a fall amounting to nearly £30,000 a week, the decline being most marked in the mining and iron and steel trades, which recently had shown the greatest rise.

In spite of the great amount of alteration in 1900, it is recorded that only 5 per cent. of those whose wages were changed were engaged in disputes on this account. This was largely due to the extent to which wages in the coal, iron and other staple trades are now adjusted by conciliation and wages boards, sliding scales or similar machinery, the cases of more than half the work people concerned being arranged by such methods.

The Hilles & Jones Rapid Action Punch.

A new type of rapid action punch has been recently perfected by the Hilles & Jones Company of Wilmington, Del. The speed at which this machine is intended to operate is about 65 strokes per minute. There are three punches and dies in position, each punch being controlled by a hand gag, so that any one may be used as desired. As will be readily understood, this arrangement allows a plate or bar to be punched with holes of different diameters at one passage through the machine. An automatic device is provided for stopping the sliding head after each stroke. This punch is built in large and small sizes and with any desired depth of throat.



THE HILLES & JONES RAPID ACTION PUNCH.

In Albert Ladd Colby's paper on "Machine Cast Foundry Pig Iron," published in *The Iron Age* September 12, the word "sulphur" should be added after the words "per cent.," in the twenty-ninth line from the top of page 7.

It has been computed that the strike has cost the city of McKeesport $1,000,000 in wages, and the loss of one large industry.

Notes from Great Britain.

Offices of *The Iron Age*, Hastings House, Norfolk Street, Strand, London, W. C., Sept. 7, 1901.

The Boiler Trials.

A report on the trials of the sets of cylindrical Scotch and Belleville boilers made in the run to Gibraltar by the sister ships "Minerva" and "Hyacinth," respectively, has been issued by Admiral Sir Compton Domvile, president of the Water Tube Boiler Committee. The details given in this report are of considerable interest, though as regards any definite result which may have been arrived at on the greater merits or demerits of the respective boilers no opinion is expressed. It will be remembered that the special object of the trial trip was not so much to test the speed of the vessels as to determine which of the two boilers produced the most satisfactory results all round, together with the respective consumptions of coal. The general conclusion seems to be that while the Belleville tubular boilers of the "Hyacinth" have fallen somewhat short of expectation, the cylindrical Scotch boilers of the "Minerva" have more than maintained their reputation.

The trial commenced on July 6, several representatives of the Boiler Committee embarking on the ships at Devonport. They started at 3 p. m., the engines working at 7000 horse-power, which it was decided should be maintained till all the coal, except a reserve of 82 tons in the bunkers, was exhausted. By 3.45 p. m. the revolutions of the "Hyacinth" were 152 per minute, the horse-power being 6994, and this was considered the start of the trial. The "Minerva" soon gave signs of being the faster vessel, and by midnight on July 7 was 4½ miles ahead of the "Hyacinth." Three days later, a bolt of the ahead eccentric strap of the starboard intermediate engine of the "Minerva" gave way, and the starboard engines were stopped for two hours while the broken strap was replaced by a new one. Special reserve tanks had been fitted in the "Hyacinth" to hold 100 tons of water, which, together with the original tank stowage, gave a total reserve of about 140 tons. The "Minerva's" total reserve stowage was about 170 tons. It was arranged that the water in these reserve tanks should be used as the only makeup feed water till it was reduced to 20 tons, in order that the amount of makeup feed used per day might be accurately gauged. When this reduction was reached, the water was to be kept in case of emergency, and all makeup required was to be obtained from the evaporators. On the "Hyacinth," however, the evaporators were brought into use when the reserve tanks had only been reduced to 35 tons, on account of the difficulty in using the special pump for getting the water out of the tanks. The staff engineer of the "Hyacinth" reported on July 17 that there was a large loss of water, all the evaporators being in use, and that 25 tons of drinking water had to be used for boiler feed. The engines therefore had to be eased, so that from this time—namely, 1 a. m. on July 11, the trial ceased and the "Hyacinth" steamed slowly into Gibraltar in the evening of the same day. The "Minerva" had continued steaming at 7000 horse-power, and on her arrival at Gibraltar, at 11 p. m. on July 12, she still had 39 tons of coal in the bunkers, not including the reserve, and 20 tons of water in the reserve tanks. The average horse-power of the "Hyacinth" was 7047 for 103¼ hours, with a coal consumption of 1.97 pounds, and the distance run was about 1810 miles, at an average speed of 17.6 knots. The "Minerva's" horse-power was 7007 for 147 hours, with a coal consumption of 2.06 pounds, and the distance run was about 2640 miles, at an average speed of 17.96 knots. On examining the "Minerva's" boilers on her arrival at Gibraltar, it was found that the openings in the Admiralty ferrules were badly choked. Flaming had occurred on the way out at the after funnel of the "Hyacinth," but no flaming was reported from the "Minerva." A number of leaks also were found in the "Hyacinth" boilers, but with the exceptions mentioned the boilers and engines on both ships had worked well on the outward voyage. Before their departure from Gibraltar all the boilers were thoroughly cleaned and overhauled, and on the afternoon of July 17 the committee again embarked for the homeward voyage. The "Hyacinth" started with two boilers alight for auxiliary purposes, and the "Minerva" with one. Before starting a communication as follows was handed to the captain of each ship:

"On the responsibility of the ship's officers, a large quantity of fresh water for boiler makeup has been taken as a precautionary measure in the double bottoms of the 'Hyacinth' and in the extra reserve tanks of both ships. These latter tanks were fitted specially for the outward trials, and do not form a part of the ship's ordinary fittings. It is to be understood that, except the amount originally allowed to each ship (about 40 tons in the ordinary reserve tanks), this is to be used in cases of emergency only during the homeward run. The evaporators, if they have not been in use before, are to be started as soon as the 40 tons mentioned have been used up, and then the makeup required is to be obtained from the evaporators. If the evaporators are unable to supply the whole of the makeup required, their use at maximum obtainable output is to be maintained, while the remaining water used may be taken from the reserve tanks."

The "Minerva" did not exceed the 40 tons expenditure, but, on the afternoon of July 20, the "Hyacinth" had used the 40 tons, notwithstanding the fact of her evaporators being at work the whole time. Several fogs were encountered on the return voyage, the ships meanwhile keeping fairly level, but on emerging from one of these it was discovered that the "Minerva" was gradually gaining upon the "Hyacinth," and when the latter vessel had once more to ease down on account of another fog the "Minerva" had steamed out of sight. Upon getting clear again the "Hyacinth" steamed at over 9000 horse-power till the evening of July 20, when a burst tube was discovered, and the fires of one of the boilers had to be withdrawn. At 9.50 p. m. on July 20 she passed St. Catherine's Point, where the trial was concluded, the "Minerva" having passed the same point an hour and a half earlier. The coal used by the "Hyacinth" on the way home was stated to be 550 tons; by the "Minerva," 451 tons. The "Hyacinth's" evaporators were all in use practically the whole time, whereas the "Minerva" used hers but little. The maximum power developed by the "Minerva" was about 8700 horse-power, while that developed by the "Hyacinth" was nearly 10,000 for at least two hours, during which time the "Hyacinth" did not perceptibly gain on the "Minerva." The "Hyacinth's" average horse-power when running clear of fog was about 9400 and the "Minerva's" about 8400. From the results of the outward run it appears that the radius of action of each of these vessels at 7000 horse-power, as far as the coal is concerned, should be, roughly, "Hyacinth," 2930 miles; "Minerva," 3000 miles. No difficulty was experienced in either ship at any part of the outward or homeward runs in keeping up a sufficient supply of coal to the fires. In presenting the detailed report of the Boiler Committee, Rear Admiral W. H. May, Controller of the Navy, calls attention to the following important points attending the trial:

"1. The very serious loss of water in the "Hyacinth," as pointed out by the president of the Boiler Committee. This was due to leaky joints. A certain number were located at Gibraltar, and on examination at Portsmouth other leaks were discovered and reported.

"2. The state of the 'Minerva's' tubes at the end of each run. On arrival at Gibraltar the cap ferrules were found to be partially choked, due to bird nesting, and the ship could not have gone any further at that power (7000 indicated horse-power). As it was, she was using up to 1.7 inches of air pressure instead of ½ inch, to maintain the necessary combustion for this power. On arrival at Portsmouth practically the same thing occurred, as will be seen from the reports.

"3. The 'Hyacinth' developed an average of 1000 more indicated horse-power than the 'Minerva' on the run home. This should have given the former a substantial increase in speed, whereas there was a slight

decrease. This extra indicated horse-power must have been absorbed either in the engines, or in the main shaft's bearings, or in the hull. It is possible that the shape of hull may have had something to say in the matter, but former trials do not bear this out. For example, when the 'Highflyer' (same class) was tried against the 'Minerva' last year, the former maintained a higher power and speed, except at 10 knots, when she had to exert more indicated horse-power to obtain the speed. The case requires investigation."

Apparently there is not much to choose between the two types of boiler in rapidity of getting up steam, while the wearing qualities and economy in fuel of the Scotch boiler have been sufficiently demonstrated. It is, on the whole, difficult to see where adequate compensation comes in for the many disadvantages attending the use of the Belleville tubular boilers, whatever these boilers may have in store for us in the future.

Iron Ore in Bilbao.

An instructive and interesting communication regarding the supplies of iron ore in the district of Bilbao in Spain lies before me. The outlook there is a very serious one, and becomes increasingly so every year; there is, however, a hopeful side to the picture. The minds of those engaged in the manufacture of iron and steel in this country have for many years past been exercised by the impending exhaustion of our iron ore supplies, and the problem of how to obtain ore elsewhere becomes more imminent in the light of the report mentioned above. It is one which must be faced, and the sooner we face it the better it will be for us. Already the native ore supplies of the Cumberland district are rapidly waning, and the greater part of the steel in this country is produced by the acid Bessemer and Siemens processes, which require a pure pig as low in phosphorus as possible. These local supplies of ore have, of course, to be largely supplemented by foreign (chiefly Spanish) importations, which of late have been used in rapidly increasing quantities. Now it is stated that the famous Bilbao deposits, which have been such a resource to British iron and steel manufacturers, are giving out and in a few years' time will be quite exhausted. The ordinary Bilbao ore, called "Rubio," is steadily decreasing its percentage of iron, and if this decrease continues much longer the ore will not be worth the cost of carriage and smelting. This deterioration in the quality of Spanish ores is given upon undoubted authority, and the prospect of entire exhaustion is now within measureable distance. In fact, the statement is made by Señor Lazurtegui, a leading member of the Bilbao Chamber of Commerce, who possesses a thorough knowledge of the mines and deposits of the Biscayan Province, that in another 15 or 20 years, at the present rate of production, not a single ton of iron ore will remain unworked in the entire province of Biscay. To those depending on the supplies of the Bilbao mines for their material this is far from pleasant hearing, but the effect of this pending calamity will not be confined to manufacturers, for the export of iron ore is of the highest importance to the port of Bilbao, and, reckoning on a long continuance of the supply of the product as the staple trade, the harbor authorities, who will be heavily struck when the export trade dies down, are constructing new harbor works of a very extensive character. Prospects are, however, not entirely gloomy. For some years past explorations in the neighboring districts of Bilbao have been made, resulting in the discovery of fresh supplies of ore which it is hoped will, both in quality and quantity, take the place of the present decreasing sources of supply. Two of the most important of these discoveries are in the provinces of Burgos and Logrono, on property owned by the Sierra Company, the chief interest in whom is held by Cammell & Co. of Sheffield. The company's mineral rights, it is stated, cover over 100,000,000 tons of Rubio and Campanil ores. A railway, 40 miles long and owned by the company, has been constructed, over which the supplies are conveyed to Bilbao for shipment. These iron ore deposits extend almost continuously for some 20 miles, and the Sierra Company also possess a large area of coal fields, both coking and steam coal existing on the property, which is traversed by the railway. A large copper area in the mountains is also owned by the company, and important silver-lead deposits exist within 6 miles of the terminus of the company's private railway. At Bilbao the company possess means for providing special independent shipping facilities on their own freehold property. Hence, though the supplies of the Biscayan province are undoubtedly being rapidly exhausted, the port of Bilbao may still retain its prosperity, and the steel makers of this country find fresh sources for their supplies of Spanish ore in the discoveries which have recently taken place.

The Markets.

The reports from the various centers of the iron and steel trade, although somewhat conflicting, indicate a continuance of the more favorable position which has lately been reported. Continental makers are pushing the export trade with the greatest keenness, which is having considerable influence on the market, and are quoting prices far below those quoted by British works. Business is slow in hematite, with price steady at 63 shillings. Makers are not disposed to sell largely, as with the improvement in trade higher prices are looked for. The Glasgow pig iron warrant market has been quiet during the past week, with price unchanged at 53 shillings 6½ pence. There have been heavy shipments of Dominion pig iron for Glasgow, which will chiefly have effect on Cleveland pig; so far it has only had the effect of increasing stock. Price remains 45 shillings 3 pence. The steel market remains satisfactory, with several large works booked up for two or three months, and higher prices are looked for all round. Tin plate bars are in good demand, and prices ruling are: Bessemer, £5 2s. 6d.; Siemens, £5 5s. to £5 7s 6d. The demand for tin plate has not been so brisk and prices are somewhat easier. Bessemer cokes, 15 shillings 7½ pence; Oil sizes, 15 shillings 7½ pence and 22 shillings 6 pence, respectively. Marked bar makers report steady trade, and the basis price remains at £8 10s.; unmarked bars, £6 10s. to £6 15s. Hoop makers are busier than for some time past. Prices have been quoted 5 shillings higher and are now £7 to £7 5s. Ship plates are in great demand, but prices rule steady at £6 5s.; boiler, £7 to £7 5s. S. G. H.

The Manufacture of Ferro-Chrome.

At the falls of the Great Kanawha, some 36 miles above Charleston, W. Va., is the Willson Aluminum Works, employed in the reduction of chrome ore and the manufacture of ferro-chrome, which is utilized in the hardening of steel of which armor plates for war vessels are made. When the Willson Company entered the ferro-chrome business they had to deal with ore so refractory that only electric heat was practicable for its reduction. It became necessary, therefore, to obtain a site for their plant where current could be generated at a minimum of cost. For this reason Kanawha Falls was chosen. Here New River, which is joined by the Gauley about 2 miles above, has a fall of about 26 feet, and is thereafter known as the Great Kanawha. The fall makes one of the finest water powers in that region, careful estimates showing that at the lowest stage 8000 ehp. can be developed. Across the river, on the top of the solid rock forming the falls, the Willson Company have built a dam, and on the north side an electric plant of 3000 horse-power Bullock alternating current generators of the revolving field type has been installed and is now at work. The remainder of the power will be developed by machinery soon to be put in on the south side of the river. In the heat kindled by this 3000 horse-power current the chrome ore is reduced to ferro-chrome. The ore used is from Australia and Asia Minor, most of it being from the latter country. The entire output of the plant is contracted to the Carnegie Steel Company and the Bethlehem Steel Company, to be used as alloy in hardening the steel for the armor plates which those companies are making for the United States Navy. To supply this demand the Willson

Works will be run to their full capacity during the life of the Carnegie and Bethlehem contracts with the Government. Ferro-chrome is also used in making the projectiles used in modern warfare, thus appearing on both the offensive and defensive sides of the conflict.

The Taylor-White Process of Treating Tool Steel.*

BY CHARLES DAY.

I have been asked to give you this evening a brief description of the Taylor-White process of treating tool steel, with special reference to our work at the Link-Belt Engineering Company, Nicetown, Philadelphia.

I will first take up the process, which has been but recently patented here and abroad. The first experiments, which led to the very thorough investigation later, and finally to the Taylor-White process, were carried out between three and four years ago, at the Bethlehem Steel Works, South Bethlehem, Pa., by Messrs. Taylor and White. At that time Mushet and Jessop tool steels were in general use throughout their shop, the former representing the best grade of air hardening steel on the market. The usual method of hardening all air hardening steel is well known, and the manufacturers in nearly every case place great stress on the fact that the tool must not be heated above a cherry red, otherwise it will be burnt, and so ruined. Not being satisfied with the limited information at hand on this matter, and having had some curious experiences with so-called burnt tools, Messrs. Taylor and White decided to make an investigation of the matter on a thoroughly scientific basis.

The experiments consisted essentially in a long series of tests made upon tools of various chemical compositions, and heated to different temperatures. These tools, after being carefully ground to the desired angles, were tested in an experimental lathe, provided with a motor drive and an Evans friction cone, in order to obtain any desired cutting speed. Most careful records were made of all these tests, which extended over several years. The results which were finally arrived at, and recently patented, are truly astonishing, the treated tools showing an efficiency ranging from one and one-half to two and one-half times that of air hardening steel treated by the old method.

The discovery of the new process depends largely on the fact that, although both carbon and air hardening steel deteriorate rapidly when the temperature rises above a cherry red, some chemical compositions of the latter class rapidly pass through this condition, the efficiency rising slowly at first, and very rapidly as the temperature rises, reaching a maximum at the point where the tool crumbles when tapped with a rod. This action can best be shown graphically, Fig. 1, the abscissæ representing temperatures, and ordinates cutting values.

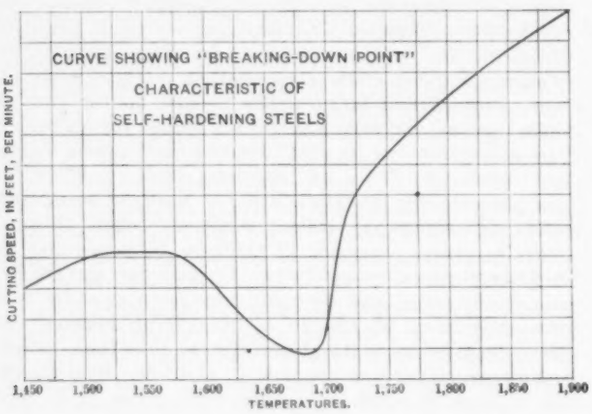


Fig. 1.

This curve does not represent any particular piece of steel, but is intended to give a general idea only of the variations of the temperature to which the tool is heated, and the accompanying cutting values. The point to which air hardening steel was formerly heated in the process of hardening is shown on the graphical sketch between 1550 degrees F. and 1600 degrees F., and has been called the "breaking down point," and varies, as do the other points, with different compositions of steel. The composition found to give the best results consists of an air hardening steel containing at least ½ of 1 per cent. chromium and 1 per cent. or more of another member of the same group, tungsten being found to give the best results. Much better results are obtained, however, by using about 1 per cent. of chromium and about 4 per cent. of tungsten; while for very hard metals, such as the chilled scale on cast iron, &c., 3 per cent. of chromium and 6 or more per cent. of tungsten are especially good. It may be interesting to note that the variation in carbon seems to matter but little, steel varying from 85 to 200 points giving equally good results.

Cooling.

The method of cooling the tools from the "high heat" (about 2000 degrees F.) plays a very important part in the process. Although there are many ways of cooling, each one being adapted to certain classes of tools, they may be described generally as follows: The tool is cooled rapidly from the "high heat" to a point below the breaking down temperature in a lead bath, and then slowly in the air, or lime, &c., as the case may be. It is very essential that at no time the temperature should rise, as in such a case the tool would be seriously impaired. After the steel has cooled off, its efficiency is found to be further increased by subjecting it to what is termed the "low heat" for about ten minutes, this temperature ranging from 700 degrees F. to 1240 degrees F. After cooling from the "low heat" the tool is ready for use. In order to obtain the best cutting edge, at least 1-16 inch should be ground off the tool, as the surface is more or less deteriorated by the high heat. The surface of special tools can be protected, however, by some form of flux, thus making it possible to treat milling cutters, &c., by this process. The treatment in all cases extends well back from the point of the tool, and permits of its being ground until so weakened as to require reforging. It is not essential to anneal the steel when reforging, and it might be well to add that all these tools can be worked with comparative ease.

In the operation of the Taylor-White process apparatus is employed by means of which temperatures can be controlled within very narrow limits, which accounts for the uniformity of results obtained with the tools

Table, Showing Increase in Cutting Speed at Bethlehem Steel Company Due to Taylor-White Process.

AVERAGE.	OCT. 25TH 1898	MAY 11TH 1899	JAN. 15TH 1900	GAIN IN % CUT OF 3RD OVER 2ND	GAIN IN % CUT OF 3RD OVER 1ST
CUTTING SPEED	8'11"	21'9"	25'3"	16%	183%
DEPTH OF CUT	.23"	.278"	.30"	8%	30%
FEED	.07"	.0657"	.087"	32%	24%
LBS. METAL REMOVED PER HOUR	31.18	81.52	137.3	68%	340%
TENSILE STRENGTH	98,000	102,322	105,764*	3½%	11½%
% EXTENSION	.19%	.169%	.15%	8 1/10%	
% CARBON	.44%	.42%	.42%		

* High tensile strength due to large amount of nickel steel being machined.

Table 1.—*Average Metal Removed Per Hour Per Tool (Round Nose) = 310 Pounds.*

THE TAYLOR-WHITE PROCESS OF TREATING TOOL STEEL.

* Abstract of paper read before the Franklin Institute.

treated by this process. It has been found necessary to modify the treatment of the special steel used in this process in order to obtain the best results under different conditions, such as varying kinds of metal cut on different types of machines, such as lathes, planers, slotters, drill presses, &c., so that no less than ten different modifications of the treatment are used in the preparation of tools for a large and fully equipped shop working on different kinds of metals and with various classes of tools. The variations required, however, in the treatment are of the most simple and easy application after once being understood, and can be handled with the full degree of success by an ordinary trained laborer.

This apparatus offers the still further advantage of hardening and tempering all classes of carbon steels, such as ordinary tempered tools, taps, reamers, milling cutters, &c. By careful operation of the process the best temperatures at which to harden and temper are soon learned, which will insure a uniformity never before attained in these tools.

Saving Effected.

It will now possibly be well to consider some of the savings effected at the Link-Belt Engineering Company's works since this process was introduced. The class of work in this company's machine shop being radically different from any encountered by Messrs. Taylor and White up to the time we adopted the process, the first few months were devoted almost entirely to experimental work, the steel having been in general use throughout the shops for only a couple of months. For this reason it is impossible to give any data extending over considerable time, but a few examples taken at random will convey a fair idea of gains we have made.

About 97 per cent. of our material is cast iron, requiring much handling and relatively little machine work. In order to make a rough test on cast iron, one tool was obtained from Bethlehem and put to work on a 7-foot boring mill, turning the inside of a cast iron ring. The time required to do this work with our old tools had been determined many times in setting piece rates, and was about 14 hours. With the Taylor-White tool this time was reduced to 3½ hours, and a gain of 75 per cent. made. To be sure, the steel used heretofore was not the best obtainable, and, besides, was probably not worked to its highest efficiency, but the saving, nevertheless, was due to the Taylor-White process, and so it is that many shops of the best standing could, after introducing this process and watching it with proper diligence in the shop, show savings considerably in advance of those claimed by the inventors. I do not wish to infer that there are not shops in existence who push every tool to its limit, but they are decidedly the exception.

Some interesting data were also obtained from an order of rope sheaves, the time required to do similar work having been tabulated for several years. The average time required to machine 13 sheaves with our old tools was nine and one-half hours; the same for 16 similar sheaves, the roughing being done by Taylor-White tools, was five hours and five minutes, or a saving of 46½ per cent. In order to obtain, however, a correct comparison of the relative merits of the tools used for roughing, it is necessary to analyze the various operations:

	Hours.
Setting up	0.9
Forming groove with special tool	0.5
Boring and polishing	0.25
Roughing	3.43
Total	5.08

Assuming the time for setting up, forming, boring and polishing the same when sheaves were finished with old tools, the time for roughing would have been 7.85 hours. From these figures we see that a saving of 56.3 per cent. was made in operations where it was possible to use treated tools.

The entire order of sheaves above referred to, many of which were small, the roughing cuts being but a small percentage of the machining, required 1569 hours' work. This was a gain of 501¼ hours, or 31.95 per cent., over our best previous records, and gives a good idea of what may be expected on work of this class.

Tools treated by this process are not intended for finishing, but rather for heavy cuts, where the tool is subjected to high heat. We have experimented quite a little with special tools, and have been very successful with boring cutters, the actual time for boring being reduced frequently 60 per cent. Here the tool saving is not as great as the figures would suggest, as the time to chuck a sprocket is at present often greater than to machine the same. The trouble lies in the design of the lathe that handles our sprockets, which we are at present remodeling in order to reduce the time of chucking and similar operations to a minimum. A test made on boring cutters treated by the process shows conclusively their superiority for this work. It consisted in boring 1 3-16 inch standard solid collars in one cut, the core being 1 inch. The lathe was speeded up until the work at the point of the cutter was going 77 feet per minute. The regular cutter lasted but ten seconds, while the treated ones bored four collars successfully.

In order to obtain some data with regard to pressure on the points of tools for given depths of cut, feed, &c., and at the same time to show the superiority of the treatment we are considering, a cast iron ring, table 2, 6 feet 6 inches in diameter was bolted to the table of a 7-foot boring mill and the results obtained tabulated herewith.

The first tool used was one treated for hard material. It cut 106 pounds of metal in ten minutes and when removed was in perfect condition. A Mushet tool under the same conditions lasted but one minute and removed 5½ pounds of metal. The actual pressure against the tool in each case exceeded 3¼ tons, while the pressure per square inch with the Me. S. H. tool was 143,000

NO.	TOOL	CIR. SPEED		FEED		DEPTH CUT	LENGTH CUT		POUNDS METAL	AMMETER		VOLTMETER		H. P.		LBS. METAL PER HOUR	CONDITION TOOL	PRESSURE ON TOOL	
		IDLE	CUT	CALCULATED	ACTUAL		INCHES	MIN.		IDLE	CUT	IDLE	CUT	IDLE	CUT			ACTUAL	PER SQ. INCH
1	H. S. H. TREATED ½" x 1¾"	86	78	1/16	.056	.91	2 3/10	10	106	32	145	112	106	4.80	20.5	636	GOOD	6650	130,000
2	M. E. S. H. TREATED 1" x 2"	86	77	1/16	.053	.91	1 5/8	7½	80	33	145	112	108	4.96	21.0	640	FAILED	6905	143,000
3	MUSHET AIR-HARDENED 1" x 2"	86	—	1/16	—	.91	—	1	5½	33	110	112	109	4.96	16.1	—	"	—	—
4	M. E. S. H. NOT TREATED	86	77	1/16	—	.91	—	1⅝	7	32	110	116	110	4.98	16.2	—	"	—	—
5	H. S. H. NOT TREATED	86	—	1/16	—	.91	—	2⅝	19	32	110	116	110	4.98	16.2	—	"	—	—

Table 2.—Tests Made on Cast Iron Ring 6½ Feet in Diameter.

THE TAYLOR-WHITE PROCESS OF TREATING TOOL STEEL.

pounds. Friction of the tool against the work was not considered in the above and would vary the results somewhat.

We will now turn our attention to steel for a few moments, and although we have very little roughing work of this character, I can recall several instances where good savings were effected, any one of which will serve as an example. One of our standard forms of internal screw conveyor is provided with steel tires about 40 inches in diameter and 40 points carbon. These are machined all over, the best time required for the entire operation of setting up, roughing, finishing, &c., with our old tools being 14 hours; this was reduced to nine and one-half hours, or a saving of 32.1 per cent. on the first order received after treated tools were in use.

Our experience on steel has been so limited that we will take the liberty to quote some figures obtained at the Bethlehem Steel Works, who have very kindly sent us some samples, which are before you. The table shows the chips cut in pounds per hour per tool, the data extending over the time the experiments were being developed, and are consequently very interesting.

A Taylor-White tool when working dry should cut blue chips continuously, so it is only necessary to turn off the water for a moment in order to see if the tool is working to its highest efficiency. The cutting speed may be increased about 30 per cent. if a good stream of water is kept on the point of the tool. It may be interesting to some to know that the point of the tool is frequently red hot when cutting dry, this fact showing conclusively the high temperatures at which the cutting edge is retained.

Effect on Machine Tool Design.

We will now consider for a few minutes the effect of this new process on machine tool design. I do not refer to very large tools and special machinery, which are usually built to fulfill given requirements, but to standard tools such as we find in every machine shop and which can be purchased from a large number of first-class concerns.

First, on account of the uniform results obtained by the Taylor-White treatment, it is possible to predict almost exactly what circumferential speeds should be used for any given material. To obtain close speed regulation with the cone method on such tools as boring mills, lathes, &c., requires multiple counter shafts, and is at best a poor rig where the work is small and the time of setting up and shifting belts a large percentage of the labor bill.

After introducing the Taylor-White process at the Link-Belt works, it was found essential to speed up many of the tools on account of the high circumferential speeds which were made possible. On account of the variety of work handled and the fact that many tools do nothing but finish work, it was not practicable to increase the line shaft speed more than 30 per cent., the natural solution being motors, the machines becoming self contained and permitting of any experimental work without shutting down the line.

As the machines were speeded up to obtain higher circumferential speeds, the power required to drive them idle was found to increase very rapidly, the limit of the line and engine being soon reached. An example may make this clear:

Seven-Foot Boring Mill.

	Minimum.	Maximum.	Power required to drive table at maximum speed. Horse-power.
Original range of table speed	0.5	17.26	10.00
First change, increased 25 per cent.			
Second change	0.9	23.50	15.30
Third change	1.28	33.8	23.00 (approximate)

Eighteen months ago a 50 horse-power Buckeye engine furnished power to about 40 of our machine tools, including three boring mills (10 feet, 7 feet, 6½ feet), our pattern shop and grinding room, the latter containing six carborundum wheels, four of which are frequently in use at one time.

The average horse-power developed has been determined frequently and averaged about 45. It required, however, about 27 horse-power to drive the line shafting and counters, thus leaving but 18 horse-power for actual work. After the new tools were in general use and the machines pushed to obtain the desired results, it soon became apparent that the power was absolutely inadequate; indicator cards from our engine frequently showed an overload of 60 per cent., and at this point we found it essential to put motors on some of our larger tools for the present, with the intention of using them entirely in the future, as stated above.

Coming back to the machine tool manufacturers, it is quite remarkable how little many of them seem to know about the power required to drive their tools under varying conditions. How many builders can tell you the pressure on the tool for a given depth of cut, feed and speed for a given material on boring mills or lathes, yet how can they expect to design the tool correctly for power and rigidity if they have not this information? Why is the power limit so ridiculously low on many of our small machines, the spindle speed and feeds out of all proportion for the work they are expected to do? The answer is easy—the question has never been attacked, by most manufacturers at least, by the methods so well exemplified in the Taylor-White process.

With a tool steel which can be counted upon to give certain results, it will be possible for the manufacturer to build machines on scientific principles, instead of guesswork; then it will be possible to work the tool to its highest efficiency, instead of finding the power limit far below the requirements, as is now so often the case.

I recall an experience we had a few weeks ago while investigating some small drill presses, purchased in order to complete an order containing several thousand duplicate cast iron parts. The ones finally obtained gave a maximum spindle speed of 290 revolutions. The Morse twist drill table calls for a speed of 214 revolutions per minute for a ⅝-inch drill in cast iron. We ran the same size drill at 290 revolutions per minute, passing through a 3-inch hub in 1 minute and 20 seconds. We found it paid to grind up completely two twist drills in a ten-hour day on each drill press, the tool room force, of course, keeping the men supplied with sharp drills.

It should be understood that the above twist drills were not treated, but the same as we have been using for years. If a ⅝-inch drill on a 24-inch drill press can be run at the maximum speed and feed obtainable, how can we expect to run the smaller sizes efficiently, and what, I wonder, does the manufacturer expect one to use the speeds for, obtainable with the gears in? We have found it possible to double the speed of all our drill presses, but this, of course, does not help the feed.

From data obtained by Mr. Taylor over a long period of years it has been possible to obtain a relation between the circumferential speed, feed, depth of cut and time element, and so derive an empirical formula upon which data, together with the details of any given tool, most ingenious slide rules have been formed. It is possible with these instruments (which are in practical use) to make out time cards from the blue print, and before any work has been done on the piece, showing the workman just where to put his belts and how to set his feeds and depth of cut for a given material in order to have the desired power, and at the same time remove the maximum poundage in order that the tool should last a certain predetermined time, the time the tool should last being based on the time necessary to change the tool, and is expressed in the empirical formula above referred to. I merely mention the above facts to show how the tool designer of the future will be able to accumulate a store of information which will be the basis of all the work, and how widely the machine shop practice of the future will differ from that of the past.

Too much stress is placed on what a machinist is paid per hour, or how long he works by the time clock. These points are of but secondary consideration, the "work rate" being the true gauge.

At the Link-Belt works no fixed rate of wages is employed, the men being paid according to their merits. After the introduction of Taylor-White steel it was es-

sential to remove the piece rates from many standard operations, and in all such cases the policy of the company has been to divide the savings effected with the men. After the men knew that they would share the advantages derived from the new process their whole attitude was different, and, in fact, what else could we expect?

Electric Railway for Speeds Up to 125 Miles.

BY WALTER REICHEL, CHIEF ENGINEER OF THE SIEMENS & HALSKE COMPANY.

The following article on the Zossen polyphase railway installation for experimental trials with speeds up to 125 miles an hour is from the *Electrical World and Engineer:*

Fig. 1.—Map of Route.

When the author of this paper about a year ago described in a German technical journal a trial road built by Siemens & Halske, giving details of the circuits and the locomotive, which was designed for long distance service, and employing 10,000 volts, he little thought that so soon afterward he would have an opportunity to record another step in advance in the polyphase electric railway field. It is nevertheless a fact that the great work about to be described, and which was inaugurated and financially backed by a number of enterprising banking houses, technical and electro technical firms, and sanctioned by influential officials, will soon be completed and put into operation.

As early as May of last year the "Studiengesellschaft" (Society for Research), inspected the Siemens trial road at Grosslichterfelde, plans were drawn up for a high speed railway, patterned after this road, and it was concluded to build two experimental cars, which were to run over the tracks of the royal military road between Marienfelde and Zossen. The mechanical work on the two cars was done by Van der Zypen & Charlier of Cologne, and the electrical equipment of one of the cars was furnished by Siemens & Halske, and that of the other by the Allgemeine Elektricitats Gesellschaft. The Siemens & Halske Company also took the contract of installing the electric line construction while the A. E. G. generated the current in their power station at Oberschonweide and laid the feeders from that place to Marienfelde. The following article describes this interesting electric railway installation:

The Problem.

The problem may be subdivided as follows:

1. The single track military road near Berlin, shown in Fig. 1, was selected. It is about 14¼ miles in length between Marienfelde and Zossen. The smallest radius of curvature is 3280 feet, and there are grades as steep as 3 per cent. (1:184). The gauge is normal. The rails are laid on wooden ties.

2. The car to seat 50 persons. It is to be no larger in width and hight than the standard Prussian State railway car.

3. Two normal gauge trucks with three axles each to be employed, and these must be able to support a maximum load of 16 tons per axle inclusive of the passenger load.

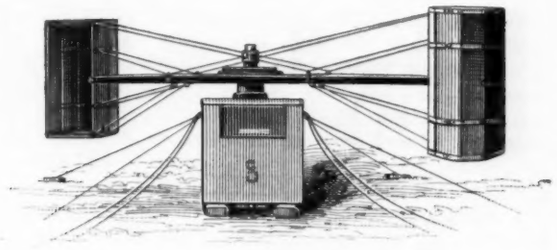


Fig. 2.—Air Resistance Experiments.

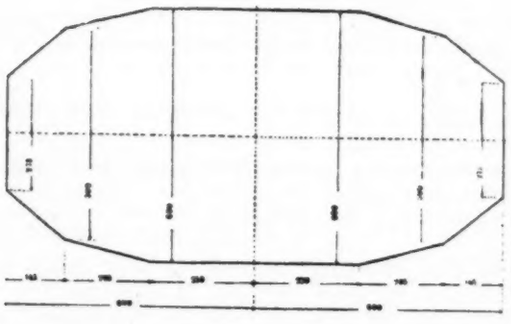


Fig. 3.—Air Resistance Experiments.

ELECTRIC RAILWAY FOR SPEEDS UP TO 125 MILES AN HOUR.

4. The current supplied is to be of the three-phase type, 10,000 volts pressure, and having a frequency from 45 to 50 p. p. s.

5. The control and regulation of the motors (the current collector and switching in of all apparatus), to be so arranged that the operations can be performed independently at each end of the car.

6. The speed is to be varied between 125 and 135 miles per hour. The electrical apparatus to be so designed that a round trip on a stretch measuring 155 miles can be made without unduly overheating them.

7. The rates of acceleration and of braking are to be so chosen that between the period of acceleration and the beginning of the period of braking there shall be sufficient time left for the careful observation of the power required for full speed. The length of this time for a distance of, say, 6½ miles, is 3 minutes. There are to be two independent brakes, a mechanical as well as an electrical one.

8. The necessary measuring and controlling apparatus are to be furnished.

9. The car is to be electrically lighted, for which purpose a storage battery my be used.

Before the general design and method of construction of the car, &c., and the various details can be discussed, it is necessary to first determine the power requirements, so far as existing knowledge and means at hand will permit. Only after this is done can a general idea as to the capacity and size of the electrical equipment of the car be obtained, upon which the working out of further details largely depends.

Power Requirements.

According to the experience gathered in the railway field it is to be assumed that the air resistance which a vehicle has to overcome when starting and when moving at full speed, is the principal resistance to its motion, and it should therefore be carefully determined. The formulæ used heretofore give values which are too high when employed for speeds as great as 125 miles per hour. Thus, for example, the formula of Grove & Clark:

$$W_0 = 2.25 + 0.001\ V^2$$

in which V is the speed in kilometers per hour, gives as the resistance in kilograms per ton of car weight:

$$W_0 = 2.25 + 0.001\ (200)^2 = 42.25 \text{ kg. (93 pounds)},$$

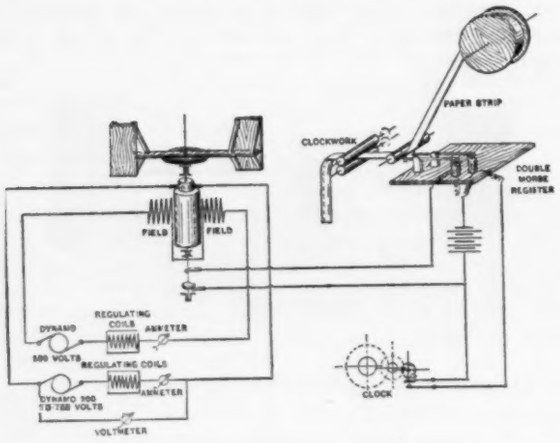


Fig. 4.—Apparatus for Determining Air Resistance.

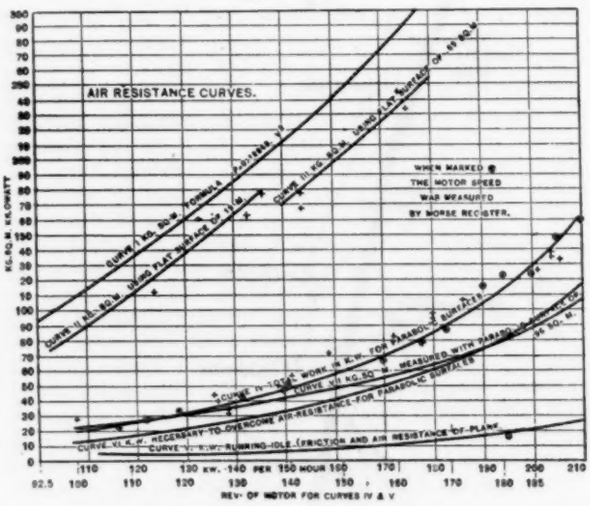


Fig. 5.—Air Resistance Curves.

ELECTRIC RAILWAY FOR SPEEDS UP TO 125 MILES AN HOUR.

which measured at the rim of the wheel, under normal conditions, is equal to

$$N = \frac{96 \times 42.25 \times 55}{75} = 3000 \text{ horse-power.}$$

The above formula, however, is only correct for speeds up to 62 miles per hour, is applicable only to whole trains, and gives the resistance in kilograms per ton of weight of train, while in this instance we are dealing with a single car; and besides it would be more correct to separate the air resistance from the frictional resistance. The latter consists of the sliding and rolling friction and the resistance caused by the jars at the rail joints and the bending of the rails. This is usually assumed as 5.5 pounds per ton, and may be calculated approximately. We will, however, not enter into this, as it would lead us too far, and for safety shall assume 10 pounds per ton. Then the draw bar pull at the rim of the wheel, in order to overcome this resistance, must be:

$$Pr = G\ W\ r = 96 \times 4.5 = 450 \text{ kg. (appr.) } 1000 \text{ pounds.}$$

If it be desired to determine the air resistance against the head end of the car, which is assumed to be round and have an area of 12 square yards, using the well-known formulæ (Hutte, Part 1, Section F, Wind Pressure and Air Resistance), then the values obtained are again too high. (See Curve I, Fig. 5.)

There can be no doubt as to the correctness of the formula. The constant used, however, might be smaller than 1.85 for a long body. It might therefore be possible to construct a device by which this constant might be decreased. This might be done by tapering the surfaces, which would undoubtedly have the effect of decreasing the value of the constant. In order to investigate the effect of these tapered (inclined) surfaces, experiments were made which may be briefly described as follows.

Air Resistance Experiments.

As no claim is made as to absolute scientific accuracy, the only desire being to determine the approximate extent of the air pressure and the influence of specially formed head ends, it was deemed expedient to employ very simple means and to approximate as closely as possible the proportions met with on railway cars.

Naturally, experiments could only be made with revolving wings, as in no other way could a speed of 180 feet per second be obtained. It was to be expected that the values thus obtained, on account of the centrifugal effect and the doing away with the friction caused by the wind at the sides, would be a trifle too low. This, however, may be corrected by a corresponding addition to the value of the air resistance against the front surface.

A large motor, from which 200 horse-power could be taken for a short period, was mounted on a solid base, composed of rails, with its shaft in a vertical direction, and was anchored in all directions, as shown in Fig. 2.

At the top of the motor shaft a wheel of an ordinary street car was mounted, and fastened to this by means of heavy pieces of sheet metal was a horizontal plank 3⅜ inches thick, 20 inches wide and 21 feet long, which carried the experimental surfaces or bodies. The field coils of the motor were separately excited, so that the motor would run as a shunt motor having a constant speed at a definite pressure. The armature was excited by a special machine in such a manner that its speed, excitation and pressure could be varied between definite limits. In this way the speed of the motor could be varied at will. The device was started at the beginning of the tests by means of a water rheostat and disconnected by the same means at the close.

For the first experiments plane surfaces made of smooth boards (without having any appreciable thickness in the direction of rotation) were used. These boards were securely fastened to the plank.

These trials showed that the method was a correct one, and would in time give satisfactory results. They also showed that plane surfaces without any inclinations give too high values and that the tapering was very essential. (Fig. 5, Curves II and III).

For the experiments which followed and which were to be final, the revolving body had more of a parabolic shape, as shown in Fig. 3, and the experience gained in the preliminary trials was made use of in these final ones. For instance, in the final tests the speed was recorded electrically by means of a double Morse register,

which at the same time made dots on the strip of paper at regular time intervals. The make and break contacts for recording the speed were attached to the shaft of the motor, which is shown in Fig. 4. Current and pressure were measured in the usual manner, so as to obtain the power consumption. The latter was also measured for the plank revolving without the parabolic bodies attached and the heating effect was also measured.

These trials, after some mishaps had been overcome, gave some astonishingly good and accurate results, shown in Fig. 5, Curve VII. The pressure against the parabolic surfaces was only about one-third of that against the flat ones. It must be kept in mind, however, that in the final tests solid, box like bodies were used, while in the preliminary tests with flat surfaces the air could rush together immediately behind them, and thus have a more pronounced effect.

It should also be mentioned that in order to check the speed of the motor with eye and ear a carefully woven cloth was attached to the extreme outer surface of the revolving bodies which could be easily seen and the waving of which would be plainly audible. This cloth was entirely torn into shreds after a half hour's usage. These small shreds had deposited themselves onto the roughened surfaces of the other body, and thus indicated the current of the air. The latter streams from a mean pressure line toward the edges of the most forward surface.

Curve VII, Fig. 5, shows a wind pressure of 90 kg. per square inch (about 19 pounds per square foot), at a speed of 200 km. (125 miles) per house. This may be too low, as bodies moving in a straight line may give higher values than revolving bodies. Furthermore, the surface is greater and therefore the pressure coefficient, and, finally, the friction along the sides of a long, moving body must be taken into consideration, all of which could not be determined. It is, however, partially eliminated by not making the roof of the car like the top of the revolving bodies, but by slanting the roof downward in front and rear, which certainly decreases the resistance. The head end of the car is furthermore assumed to have an area of 10 square inches (12 square yards).

The draw bar pull necessary, therefore, to overcome the wind pressure is

$$Pw = Fp = 10 \times 90 = 900 \text{ kg. (1980 pounds.)}$$

At a speed of 55 m. (180 feet) per second the total power of the car, measured at the rim of the wheel, expressed in horse-power, is

$$N = (P_w + P_r)\frac{V}{75} = (960 + 450)\frac{55}{75} = 950$$

or, in round numbers, equals 1000 horse-power.

Now that the power capacity of the car has been determined, we will describe the design and equipment of the same.

General Design of the Car.

Two conditions were imposed upon the builders of the car. 1. The capacity had to be 1000 horse-power; 2, the maximum weight was to be 96 tons. No restrictions were placed on the electrical equipment, nor the length of time the apparatus was to be kept in service. There is very little data at hand which would assist the designers in determining the proportions of the various electrical devices to meet the desired requirements, but in view of the magnitude of the latter it would appear that the equipment should be as heavy as is permissible within the limits of the prescribed weight of the car, in order to meet the requirements with safety.

In this manner the problem was approached, and the final execution of the plans was the result of numerous designs and calculations (especially of weights), the mechanical and electrical devices being altered in size and capacity and shifted about as was deemed most expedient.

The following table shows the distribution of the weights of the various apparatus:

Mechanical Portion.

	Pounds.
Car body, iron frame and metal substructure, wood, glass, seats, hand brake with appurtenances, air brake with pipes and reservoir, floor and roof covering	45,540
Trucks complete, including wheel base, auxiliary air reservoirs and brake cylinder and brake shoes	60,060
Total	105,600

Electrical Portion.

Motors without axles and wheels, but including support	35,860
Complete rheostat controller	11,220
Controller with pneumatic attachment, electrical circuits, safety devices, fuse boxes, switches and levers for motormen	10,450
Large transformers and their support	27,060
Air pumps and supports	2,200
Small transformers for the same	1,430
Current collector with attachments	2,860
Lighting devices, including battery	1,100
	92,180
Adding for safety	1,320
Total	93,500

Passengers.

Fifty passengers, including motorman and conductor at 80 kg. (176 pounds)	8,800
Total	8,800

Adding these we get:

$$48{,}000 + 42{,}500 + 4000 = 207{,}900 \text{ pounds.}$$

which is equal to 94.5 metric tons.

In apportioning the various weights the electrical equipment in the car body was made as light as practicable, and it was so distributed that the car body support might be made as light as possible. This will be evident from the following detailed drawing of the car construction and equipment, shown in Fig. 6.

The Mechanical Equipment of the Car.

The requirements of the car body are that it shall be of such a size as to accommodate 50 passengers, who are to be provided with cross seats in a center compartment, called salon, and two rooms adjoining the salon. The central room is 24 feet in length, contains 18 seats, while the adjoining compartments are 13.12 feet long, and each has a seating capacity of 12. Adjoining these sections is the anteroom or platform, on which there are three seats 5.74 feet in length. From this platform passengers enter and leave the car. Finally there are the two platforms (one at each end) for the motorman, which are 5.24 feet in length. The car has, therefore, 48 seats and is 24 yards in length.

The body is carried on longitudinal girders which are joined together on top and bottom, thus being light in weight, but capable of bearing a heavy load. The plates joining the girders are composed of U and flat iron, and are connected by heavy sheets of iron reaching from the lower end of the windows to the lower edge of the car body.

Besides the above, the frame is braced transversely and longitudinally in the usual manner, the arrangement of which depends largely upon the location of the various electrical apparatus. At the front and rear end couplers and bumpers prescribed by the Prussian Railroad Department are attached.

The interior arrangement of the several sections and the entire car body is the same as that of a third-class car of the Prussian State roads. The seats are made of wood and are fixed to iron supports. The car greatly resembles in outward appearance the ordinary train car, except that the front and rear ends are of special parabolic shape so as to reduce the resistance to the air. The roof also slopes down in front and back. The entire body can be mounted into the truck frame without the use of springs, by means of a projecting pin. The truck frame, however, is separated from the journal boxes by a double set of springs. The structural iron truck frames primarily rest upon spiral springs which are adjustable by means of a bolt. From these the load is transferred to long, flat springs which rest on the journal boxes. The middle one of the three axles is not used for the mounting of the motor, because the space above it has to remain free for the supporting frame for the pin in the car body and the braking apparatus. In order, therefore, to have an equal load on all the axles the springs for the running axles must be stronger than those for the motor axles. All of this is clearly shown in Fig. 7.

The braking is accomplished by an automatic Westinghouse brake, and all wheels are braked on the two sides, so that 100 per cent. of the weight of the car is braked. For this purpose two 10-inch brake cylinders are built into each of the trucks. In this way each truck is a distinctive operative vehicle by itself, and each

has in addition two auxiliary air chambers. The various brake rods of the Westinghouse brake may furthermore be acted upon by a handbrake, by means of which the motorman, stationed at either end of the car, can brake about 80 per cent. of the total weight of the car. The outside diameter of the wheels is 48.21 inches.

All the above conditions were incorporated into the designs of Van der Zypen & Charlier, who built the cars. The truck is shown in three views in Fig. 7.

Electrical Equipment of the Car.

The following conditions have to be complied with in the design of the electrical equipment. In the first place, the passengers and employees must be adequately protected against the danger of high tension currents. This is only possible when all apparatus and wires are situated under the car floor or under the roof, which are connected to the earth by means of sheet metal plates. None of the apparatus is to be made directly operative by the motorman's hand, but by means of a special power device. This also simplifies the operations and does not tax the strength of the motorman. Compressed air seems well adapted for this purpose, as it has to be carried on the car for the operation of the brakes. The air reservoirs for power and brake purposes, however, must be separate.

The equipment must be so arranged that all parts can be easily inspected, be easily attached and removed, and in case any device becomes inoperative another part of the equipment can supply the deficiency. The load must furthermore not all be concentrated at one point, but must be evenly distributed, the effect of which will be that the heat which is generated will be more easily dissipated.

Compliance with these conditions made it necessary from the start to divide the electrical equipment into two distinct units, each one containing two motors, with two rheostats, two main switches, two fuses, a large transformer, with delta and star switches in the secondary, and primary high tension switches as well as high tension protective device; an air pump and small transformer with fuses, a current collector (trolley), an air reservoir, a motorman equipment with compressed air switches and measuring instruments. How these devices are connected together is clearly shown in the diagrams, Figs. 9 and 10.

Although the diameters of the wheels have been made 125 cm. (48.21 inches), the number of revolutions made by the wheels is still so great that it has been deemed advisable to mount the motors directly on the axles. Each truck is supplied with two motors, the entire car, therefore, with four, so that each motor only has to furnish one-fourth of the entire 1000 horse-power.

In order not to consume too much time at starting it has been calculated that the motors must be capable of furnishing 3000 horse-power. The increased capacity is usually obtained by loading the motors more heavily. In case one equipment is disabled, however, the pressure in the primary circuit of the motors will be raised. The pressure has to be so chosen that the current strength will not be too great, so that the contact surfaces of the motor switching devices will not be too large. The primary pressure for full speed has therefore been chosen as 1150 volts, and for starting as 1850 volts. The motor speeds are regulated by means of resistances which are inserted in the secondary circuit of the motors and are cut out successively until the induced winding is entirely short circuited. The secondary voltage at a standstill—*i. e.*, at the point of starting—is about 650 volts.

So as to avoid a possible break down metallic resistances are employed. On account of the excessive room which they occupy and in order to insure their cooling off the resistances are inclosed in flat cases which are placed along the two side walls of the car between the two doors.

In order to make the connections between the resistance coils and their controllers as short and simple as possible the controller cylinders are distributed in a similar manner to the coils themselves. For this purpose the space below the resistance boxes between the two trucks was utilized.

The controller cylinders are operated mechanically, and as the power required is quite considerable, an auxiliary compressed air mechanism can be brought into action. At all times, however, the motorman has perfect control over the cutting in and out of the coils.

As stated above, the motors receive a primary voltage varying between 1150 and 1850 volts. The resulting currents are sufficiently low to be easily carried by the contact surfaces, and especially if there is a separate controller for each motor. This has the added advantage that in case a motor becomes inoperative it can be cut out of the circuit by its own controller.

The varying voltage is obtained by means of the delta and star connections of the transformer secondaries, of which there are two. Each transformer has its delta and its star connection switch. These devices are similar in shape, but differently connected. Four switches are placed together into one case which, for inspection, can be easily removed from the car. The lighter cases and apparatus are symmetrically arranged in the center of the car, while the heavy transformers are attached as closely as possible to the trucks so that the frame supporting the car body is well utilized. The switches are operated by air pressure, which is controlled by the motorman. The safety devices are likewise placed in the switch case.

Each of the two transformers is not, as is usual, formed like an equilateral triangle, but the three legs are simply laid flat, next to each other. Their lengths, in order to be able to establish cooling currents, are coincident with the length of the car. In this way the transformers can be placed under the car floor. The primary, which receives a pressure of 10,000 volts, is permanently connected in star (Y) fashion, and is cut in and out by means of a high pressure switch which is situated near the trolley directly beneath the car roof. The connections between these switches and the transformers consist of bare wires mounted on high pressure insulators, so as to facilitate inspection. They are run for a short space along the roof and then down an iron cable way 20 inches in width, which also serves for ventilating purposes. These cableways adjoin the walls separating the central from the end sections; the safety devices are

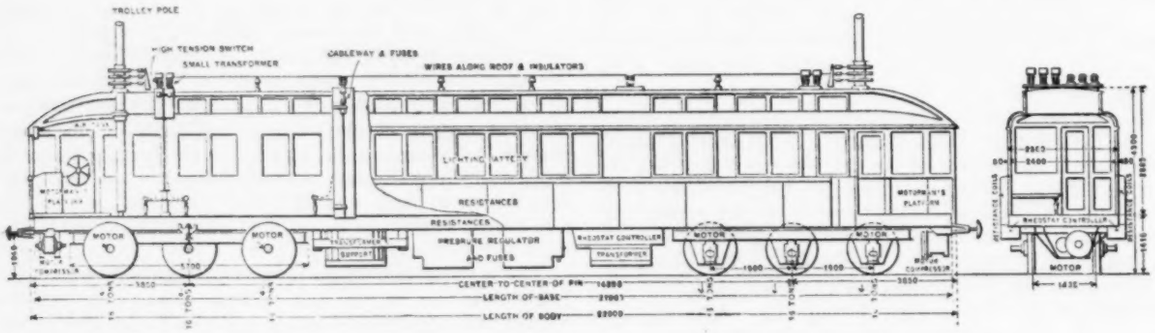


Fig. 6.—High Speed Railway Car.

ELECTRIC RAILWAY FOR SPEEDS UP TO 125 MILES AN HOUR.

located at the top of the cable way, and right above the wall separating the end sections from the platforms is an iron trough containing a small transformer for the

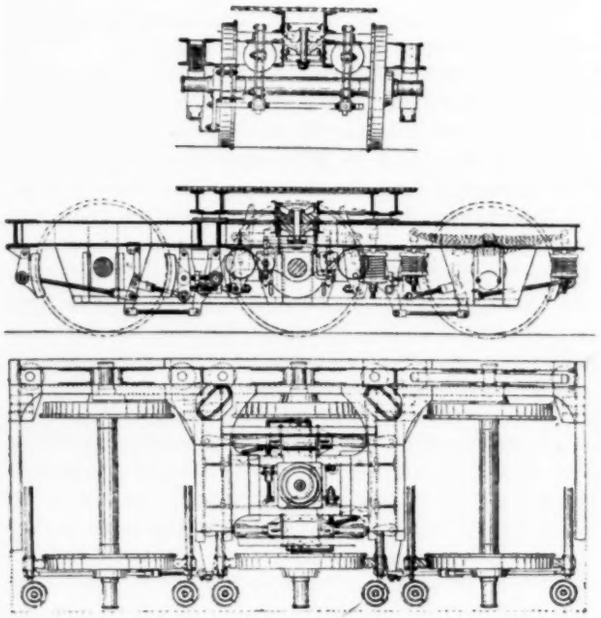


Fig. 7.—Truck for High Speed Car.

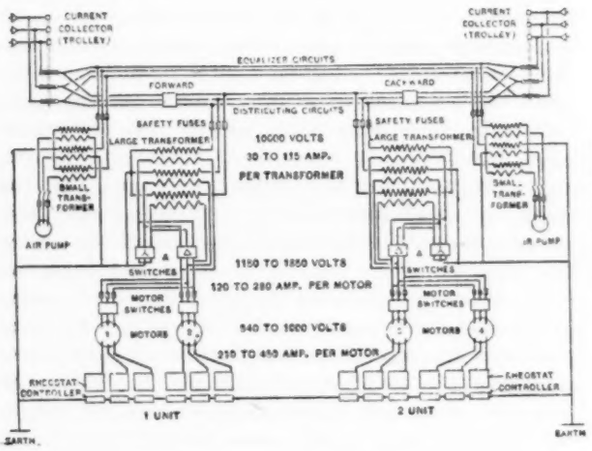


Fig. 8.—Diagram of Connections.

The air pumps are located under the motorman's platforms and are supplied with current from the small transformers, ratio 10,000:110.

To the dashboard, in front of the operator, a switchboard is fastened, on which are located the various cocks which connect the air pressure cylinders of the devices either with air pressure reservoirs or with the outside air. The cocks are turned in this order when starting up: "Forward," or "backward," then "motors" and "rheostat controller," and the reverse order when the car is to be stopped. On the board is also the cock for the Westinghouse brake, the switch for the air pump, and near the table the measuring instruments for air pressure, voltage, current and speed.

The car is electrically lighted by means of a storage battery and in case of necessity stearine candles can be used.

Line Construction.

The trolley wires are suspended in a manner similar to that employed on the Siemens & Halske experimental road at Grosslichterfelde. The trolley poles are located 7.38 feet from the center of the track and the three wires are each separated 3.28 feet from each other. The lowest wire is supported 18 feet above the surface of the rails. The total line is divided into sections 0.621 mile in length, and at the center of each section is an auxiliary feed connection. At the end each section is connected by means of an insulator to a heavy pole. The zero point of the system is grounded—*i. e.*, it is connected with the earth and track. Lightning protective devices have been provided, and in case a wire should break the current is cut off from it before it falls to the ground. The feeders are

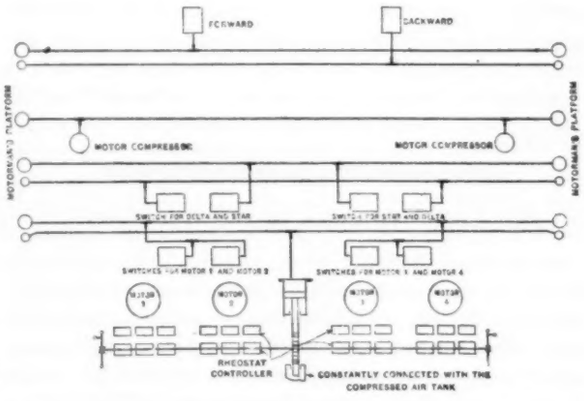


Fig. 9.—System of Pipes Leading to Switches and Controllers.

ELECTRIC RAILWAY FOR SPEEDS UP TO 125 MILES AN HOUR.

air pump and a high pressure switch, all of which can be clearly seen in Fig. 6. These last named switches serve also for altering the direction in which the car is to run. For that reason only one of them is closed at a time and, as seen in the diagram, all the energy for the operation of the car must pass through this switch.

The current collectors, or trolleys, must operate without sparking if possible, and must be separated considerable distances from each other. As the trolley wires are suspended vertically beneath each other at the side of the track, the current collectors swing in a horizontal plane around a vertical axis. This axis consists of a stout pole which is almost directly over the center of the truck, measured from side to side, so that the current collectors do not have a very large reach. The trolley pole and its controlling mechanism reaches down to the motorman's platform, from which place it may be revolved in any direction.

The current passes from the contacts into collector rings, from which it is taken off by means of brushes which are connected by wires with the high pressure switches. The upper part of the pole, together with the collector rings, can be taken off, while the lower portion remains in the car body in its bearings.

connected to the trolley wires in the neighborhood of Marienfelde, Fig. 1.

The German Plate Syndicate.—The following figures have been published of the deliveries by the German plate syndicate during recent fiscal years in metric tons:

	1897-'98.	1898-'99.	1899-1900.	1900-'01.
Steel boiler plates...	87,725	104,264	124,649	90,110
Iron boiler plates....	7,970	5,451	2,549	1,280
Marine plates.....	4,078	12,248	18,716	10,801
Ship plates.....	31,775	52,921	56,207	68,431
Other plates.....	86,858	108,832	135,295	86,008

It will be observed that the manufacture of iron boiler plates has practically ceased an dthat there has been a steady gain in the tonnage of ship plates.

A 22-foot pleasure launch was shipped this week to Serrell, White & Cie., of Paris. This is the second launch sent over this fall in spite of the late season. The local branch of this concern, Serrell & White, 18 Broadway, New York, report prospects of large sales in this line for spring delivery.

The Iron Age

New York, Thursday, September 19, 1901.

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American manufacturing industries have lost in William McKinley a consistent, eager and intelligent champion. During his long public career he kept in close touch with the productive industries and acquired a profound and accurate knowledge of their requirements. An acknowledged leader during a long and bitter struggle, he rose as his opportunities grew, and only a few days before he fell under the assault of an assassin he had outlined, in precise and convincing terms, the policy which changed conditions and progress hold out as likely to be most beneficial to our country. The loss of such a leader, under circumstances so distressing, will be sorely felt by our great manufacturing industries. The confidence in the earnestness and ability of a man like William McKinley is of slow growth. There must be a period of watching and waiting until his successor has justified his claim to those qualities which are the conditions of leadership. The blow of the loss inflicted and the uncertainties involved in a change falls upon the country at a time when, as Mr. McKinley himself so vividly pointed out in his last public speech, we were enjoying unexampled prosperity. The hope is justified that there will be no wavering in our advance, it being certain that our progress will not be stayed.

The Labor Troubles in the Iron Trade.

It is to be hoped that the termination of the strike in the rolling mills of the United States Steel Corporation will mark the end for a long time of labor disturbances in the iron trade. No other branch of manufacturing industry has been so seriously disturbed from this cause during the past 15 months. Last year the Western bar iron mills, the sheet mills and the tin plate mills were closed in consequence of a disagreement over the wage scale for more than three months, and this year the sheet mills and tin plate mills, with some of the Western bar mills, have again suffered from protracted labor troubles, which have thus caused considerable restriction of production. Not only have the manufacturers of iron and steel rolled products been harassed from this cause, but manufacturing consumers have to a great extent been seriously embarrassed in the prosecution of their operations.

The annual reports just issued by the Republic Iron & Steel Company and the Colorado Fuel & Iron Company show how much the business of these companies was interfered with by labor troubles. In the case of the Colorado Fuel & Iron Company, it is true that the strike was confined to their coal mines. Nevertheless, the operations of the company, considered as manufacturers of iron and steel, were financially affected. The United States Steel Corporation will unquestionably show that they have suffered considerably from the strike in their mills when their report is issued covering the operations of the present fiscal year. All these companies would have done very much better for their stockholders if they had been able to conduct their operations without any interference from labor troubles. They have fortunately not caused financial embarrassment to these companies, as all of them were well provided with cash resources.

The interference with business resulting from these strikes has not alone affected the operations of these companies. The general public has been interested in a great many ways. The numerous local tradesmen depending on the patronage of the workmen in the mines and mills have had their business seriously restricted and undoubtedly failures have been caused among them. Transportation on the railroads has been cut down, and the operations of manufacturing consumers depending on the production of the mills closed by strikes have been greatly injured. In some cases it has actually been necessary to close factories simply because the materials necessary could not be obtained from other sources to enable them to continue in operation.

The workmen who have been concerned in these labor troubles should take to heart their disastrous experience and permit the iron trade to have a long rest from any similar occurrence. It would be well if the iron trade could be kept entirely free from any disturbance of this character for a long period of years. It seems in looking back over these difficulties that not one of them was justified. In fact, most of them were due to circumstances which now appear to have been of a trifling character, such as should have been settled within a few hours, or at furthest a few days. Bitterness has been engendered in addition to the heavy loss in wages, and in numerous instances lucrative positions have undoubtedly been sacrificed which are now being filled by other men. The whole history of these various occurrences is deplorable, particularly when viewed from the standpoint of the workmen themselves. They were the principal sufferers. They have found that even though the employing companies consist of corporations whose stocks are quoted in Wall street, that fact did not deter the managers of the corporations from strenuously resisting the claims made by the men. This is an unexpected development, as the leaders of the men had supposed that the Wall street connection would make these companies exceedingly vulnerable to such an attack. The resistance which has been made so successfully should convince them that in the future no unreasonable demands can be made with any hope of success. The lesson has been expensive to all parties concerned, but it should have a wholesome effect.

Publicity for the Affairs of Industrial Corporations.

One of the favorite remedies proposed for the evils which are supposed to cling to modern consolidations is publicity concerning their affairs. We believe that this is urged particularly by those who would like to have the interests of innocent purchasers of trust stocks properly guarded. Legislation is of course proposed, as it always is. But it has seemed that self interest would prove far more efficacious. In the financial columns of respectable daily newspapers the methods of the management of our railroad companies, and of the directors of our iron and steel stocks, have been contrasted to the disadvantage of the latter. The demand is being reiterated that those in control of iron enterprises, whose stocks are listed on the exchanges shall do more than submit an annual report simply. It is urged that monthly statements of gross and net earnings be issued to stockholders, so that they may be better informed as to the progress of the enterprise in which they have

embarked their money. This is not done by a single industrial in the iron or metal trades, and, as a result, these securities are more and more under suspicion. The listing of stock on the exchanges gives the holders thereof a market at all times, whose fluctuations they may watch from day to day, if they desire. The directors of a listed stock company are under the obligation to their shareholders, since they have accepted their trust under the peculiar conditions incident to public corporations of this type, to afford not only their stockholders, but to the public in general, all reasonable information. While a few men may buy securities on mysterious tips, the great majority of investors purchase because they possess information satisfactory to them as to the condition and the prospects of the concern, or as to the industry in general in which they are engaged. To the extent to which disposition to purchase a stock is thus facilitated the holder who may want to sell is benefited. In a public company he is entitled to that advantage.

Workmen as Directors.

The thoughtful student of the evolutionary process which is gradually changing the status of labor in all civilized countries finds cause for surprise in the fact that in conservative England so many experiments along the line of advanced socialism are regarded so favorably. For example, the South Metropolitan Gas Company of London, one of the greatest gas undertakings of the world, have, through their executive officers, formulated a scheme for the election, at their coming annual meeting, of directors to represent the share holding employees, as provided for in the acts of 1896 and 1897. The main provisions of the plan, which has received the approval of the Board of Trade, are as follows: It shall go into operation as soon as approved by the shareholders and continue in force for nine years, subject to termination if the nominal stock holdings of employees shall fall below a total of £40,000, or if a majority of the shareholders of record shall determine that the continuance of the system is not to the advantage of the corporation. At the half yearly general meeting in August, 1904, and again in August, 1907, the company's directors shall specially report to the stockholders on the practical working of the scheme, and should the shareholders conclude from such reports that the plan is not working well they may vote to abandon it after notice of six months. A majority vote cast in person or by proxy shall determine the issue.

The number of employee directors shall not exceed three, one of whom shall be a salaried officer and the other two weekly wage earners. For the purpose of electing such directors every employee shall have one vote for each share of stock of the par value of £10 held in his own name, or jointly in the names of his wife or children, up to ten shares. For larger holdings the employee has one vote for each £25 above the first £100 and up to £300; one vote for each £50 above £300 and up to £1000; a maximum of 32 possible votes for the employee owning shares to the par value of £1000. If his holding exceeds this amount he has no more votes in this specific classification. Under such favorable circumstances we presume he would have a preference for voting in the regular way as a stockholder, and without reference to the fact that he was an employee of the company. The qualifications of an employee director are that he shall have been not less than seven years continuously in the company's employ, and have held stock to the par value of £100 for at least one year before his election.

One month before each election for directors the secretary of the company shall make out an alphabetical list of all the employees eligible to election as directors. Such lists shall be posted in conspicuous places about the plant and offices, and copies shall be given on demand to every stockholding employee who may desire the same. Any employee who, being eligible, does not care to be presented as a candidate, may have his name omitted from the list, or withdrawn from it, by giving notice to the secretary. The voting system is somewhat elaborate, but perhaps not more so than the number of stations composing the plant and the very large number of employees may demand. Candidates are first selected by ballot, and then the choice is made from among the candidates by a separate ballot. The rules are also somewhat intricate relative to the loss of time by the director who has to leave his work to attend to directorial duties. He is "docked" for the time thus lost, but receives as director compensation equal to the amount he would have earned if he had remained at work, plus £1 1s. (to wit, 1 guinea, constituting him the conventional "guinea pig" of the board room), for each session of the board he is summoned to attend. As the board holds weekly meetings the net advantage to the employee director will be about $5 per week. What the company will gain from his services is problematical.

Concerning this elaborate scheme we are moved to ask in all seriousness: What is the good of it? We can discover no other result as likely to follow it than to emphasize class distinctions, and erect a barrier between the employee stockholder and the stockholder who does not happen to be an employee, which will forever prevent harmonious and sympathetic co-operation.

In a shareholders' meeting the employee who holds shares and is entitled to be present has, and should have, precisely the same status as any one else. If he belongs to an influential minority it is often good policy to give him acceptable representation. He has the right to ask questions and to take part in the discussion of resolutions. On many subjects his views, resulting from more intimate acquaintance than others can have of the practical workings of the company's policy, may be extremely valuable, and he should be encouraged to express them. He may, in turn, learn something of advantage to himself and other wage earners from the views of persons not so classed, but who are men of affairs with large business experience and clear perceptions. He might even be encouraged to take an active interest in the company affairs, if in any way shy of doing so by reason of the smallness of his holding. All this would make for good. It would make the frugal workman who had expressed his confidence in the corporation he works for by buying some of their stock feel that in proportion to his means he was a capitalist and investor, respected by other capitalists who were in a position to be larger investors. None of these benefits will result from penning him in a class by himself, and giving him a minority representation in the board if he will vote for it where he belongs and not intrude himself upon the gentlemen who choose the balance of the board and retain the control of the property as effectually as if the employee elector did not exist.

It is also not clear how the wage earning shareholders are to be benefited by the system. He has no reason to suppose that the men he prefers to vote for will manage the company any more wisely or profitably than would those chosen for qualifications quite outside of those prescribed for the employee director. Class representation may be the very worst kind of representation he could have, viewing the matter from the standpoint of the in-

vestor. A minority can do nothing except obstruct business, and there is grave reason to think that directors chosen to specially represent labor would be actuated by greater zeal than discretion in reflecting the views of their special constituency; whereas the same men chosen by the general stockholders' meeting, would perhaps see their duty from a very different standpoint.

We cannot resist the conclusion that any plan is wrong in principle and likely to be vicious in operation which makes any distinction between a stockholder who is an employee and one who is not. The experiment is an interesting one, no doubt, but we had much rather see it tried in England than in this country.

Emergency Provisions for Accidents.

Some months ago we gave in these columns a description of a system introduced by a prominent manufacturing concern for giving to injured workmen the kind of assistance most immediately needed, with some account of the articles provided for emergency use and of the means by which the workmen selected for first aid were instructed in their duties. The system is working well and has already resulted in an important economy to the establishment introducing it. It differs from the method adopted in other works chiefly, and perhaps only, in being more thorough. In the matter of first aid to the injured, however, thoroughness is indispensably a condition of success. The most generous provision of drugs and appliances will be found of little value if no one knows how to use them and no system is maintained by which they are taken care of and properly dispensed. The more liberal the provision of fire fighting apparatus in a manufacturing plant the greater the certainty of confusion and panic if no one knows how to employ it, and it is the duty of no one in particular to see that it is always ready for use and that it will be used properly when required.

As a result of a movement started some years ago among the railroad companies to induce them to provide on trains and in stations the appliances likely to be needed before medical attendance can be secured for employees or passengers hurt in accidents, a great many roads provided what are known as emergency boxes, supposed to contain everything likely to be needed under such circumstances. As the result of a recent investigation, however, it was found that, as the rule, very little had been done beyond providing such boxes, and that the good intentions as to the instruction of the men in the rudiments of first aid had failed to materialize. In many instances the boxes had been drawn upon more freely than anything in the accident record would warrant, and that what had been removed it was no one's duty to see replaced. An interesting exception to the rule is furnished in the case of the Lehigh Valley Railroad, which has taken hold of the idea in a very practical and businesslike way. The company has 270 emergency boxes in service, and the number requiring replenishing averages ten per week. The articles used are accounted for, and the fact that the draft upon the provision is so considerable would indicate that it is doing good to those who need prompt assistance. Superintendent Wilbur is authority for the statement that since these boxes were introduced, "the mortality after serious injury on our system has been reduced more than 50 per cent." Injured men are taken to the hospital as quickly as possible, but with intelligent emergency aid they are received in much better condition than before. Humanity of this sort has an economic side which is not unworthy of consideration by officers charged with the responsibilities of corporate management. Employers' liability, even when not enforced by special statutory enactment, is becoming more and more clearly recognized as a principle of common law, and it is much cheaper to save lives than to pay damages for the loss of them.

The interest which this subject has for the owners of industrial plants should be more generally recognized than it is. The difficulties in the way of establishing a perfectly satisfactory service of this character are very slight and the expense is less than the value of the time lost in the confusion and general demoralization of one accident. The more thoroughly it is done the better the results which may be expected to follow it. To provide the miscellaneous assortment of druggists' sundries which a physician might suggest and leave their use to luck and good intentions is better than to make no provision, for the reason that the physician when called is likely to find ready what he most needs and needs first; but the true principle of first aid to the injured is not thus carried out, and its advantages are only in part realized if thus partially and inefficiently applied. However, the idea is growing in interest for those who should find it interesting, and where it is neglected it might very well be taken up by the men and carried to a point where its advantages will become apparent in the office.

The Union Steel Company.—The new rod, wire and nail mills of the Union Steel Company, at Donora, Pa., are now in operation, and the concern are turning out rods, wire nails, plain and annealed wire, barb wire and fencing, and are giving employment to about 1000 men. In connection with the mills already in operation another large plant is to be erected at once. This will be built by the Mathews Woven Wire Fence Company, who are an identified interest of the Union Steel Company. The concern will make patent woven wire fencing, and will get their entire supply of wire from the Union Steel Company. In a short time the Union Steel Company will break ground at Donora for the building of a blast furnace, and either 10 or 12 basic open hearth steel furnaces. Some of the contracts for the blast furnace and the steel works have already been placed. Julian Kennedy is consulting engineer, and the greater part of the plans are ready. The blast furnace will be 22 feet in diameter at the bosh and 90 feet high. The contract for the iron work has been given to the William B. Pollock Company of Youngstown, Ohio. The contract for the blowing engines was placed some time since with the Mesta Machine Company of Pittsburgh. It is the intention of the Union Steel Company to eventually build a second blast furnace, and for this reason five blowing engines have been ordered, and these will be able to supply air enough for both furnaces. As yet none of the contracts for the basic steel plant have been let, but these will be given out before long. The Union Steel Company have fortified themselves with ore and coke properties, and with the erection of blast furnaces and steel works will have everything within themselves and be able to make their finished products from the ore up. The Mellon interests of Pittsburgh are largely interested in the Union Steel Company. The offices are in the Empire Building, Pittsburgh, and W. H. Donner is president, and S. H. Waddell, secretary. The concern have already sold the greater part of their output of nails and wire for the next two months.

The Carrie Furnaces.—Very rapid work is being done on the rebuilding of Nos. 1 and 2 Carrie furnaces of the Carnegie Steel Company, at Rankin Station, Pittsburgh. The Riter-Conley Mfg. Company of Pittsburgh have the contract for the iron work. No. 1 is expected to be ready for blast about October 15 and No. 2 a month later. The capacity of each of these two stacks will be 400 tons a day, while Nos. 3 and 4, which are now in blast,

will each turn out about 600 tons a day. This will give a total daily output of 2000 tons of Bessemer metal at these four furnaces, all of which will be taken in molten state across the Monongahela River by bridge to the Homestead Steel Works, to be used in the direct process.

The Strike Settled.

The strike in the sheet, hoop and tin plate mills in the Central West, which has been in force since July 13, has been settled on terms dictated by the United States Steel Corporation, and at a serious cost to the Amalgamated Association. It became evident soon after the strike had been started that President Shaffer and the Executive Committee of the Amalgamated had made a serious mistake in going into a fight, and had the strike lasted two or three weeks longer not a single mill owned by any of the constituent companies of the United States Steel Corporation would have been union, but on the contrary, all would have been nonunion, and the United States Steel Corporation would probably never again have had any dealings with the Amalgamated Association. By the terms of the settlement the Amalgamated Association has lost some valuable mills and a large number of its members. It is doubtful if the association will ever again be as strong as it was before the strike started. It has practically no following whatever in the sheet mills of the American Sheet Steel Company, is recognized only in one works of National Steel Company and in only six mills of the American Steel Hoop Company, has no hold whatever on the tube mills of the National Tube Company and has lost five or six of the larger tin plate mills, where formerly the scale was signed for all but one mill. In addition the Bay View and Joliet mills of the Federal Steel Company, for which the Amalgamated scale has been signed for years, will be started up nonunion and the men will have to return to work as individuals. Whether the Amalgamated Association can continue to exist with so few members and such a small following among the mills is a question. The association has been unfortunate in having a man for its president who was weak and too easily led by members who did not understand the true situation. The Amalgamated Association is badly torn by internal dissensions, and it will take a long time to heal the breaches which have been created since the strike started and in the manner in which it has been settled.

The Tin Plate Mills.

Before the strike was declared the Amalgamated Association scale was signed by the American Tin Plate Company for all their mills with the single exception of the Monessen works at Monessen, Pa. In the two months that the strike was carried on the managers of some of the works of the American Tin Plate Company were very active and succeeded in starting not less than half a dozen mills. These works in the future will be operated nonunion and are as follows: Monongahela, Star and Demmler works, at Pittsburgh, Banfield works, at Irondale; Crescent works, at Cleveland. In addition, the Monessen works, at Monessen, continue nonunion, making six of the larger tin mills that will not sign the scale in the future.

In the Hoop Mills.

When the strike started the Amalgamated Association had organized lodges and was strong enough to close down the Lindsay and McCutcheon, Painter and Clark works of the American Steel Hoop Company, all in the Pittsburgh district, and there was more or less trouble in getting the men to stay at work at the Monessen mill of the same concern. The strike was not very old, however, until all of the above four mills were in operation and with nonunion men. No attempt was made to start the union mills of the American Steel Hoop Company, but had the strike not been settled it was the intention of the company to start up this week with nonunion men the Warren, Pomeroy and Upper and Lower Union mills at Youngstown. The settlement of the strike, however, saves these mills to the Amalgamated, and the American Steel Hoop Company will sign the Amalgamated scale for the Warren, Girard, Greenville, Pomeroy and Upper and Lower Union mills. The nonunion hoop mills are the Lindsay and McCutcheon, Clark, J. Painter & Sons, Monessen and Portage works. The latter two plants continued running right along through the strike.

In the Sheet Mills.

The Amalgamated Association has practically lost its hold entirely in the sheet mills of the American Sheet Steel Company. The following is a list of the union plants of the American Sheet Steel Company, with the number of mills in each:

Union Sheet Mills.

	Mills.		Mills.
Ætna-Standard Works	23	Dresden Works	4
Cambridge Works	7	Falcon Works	4
New Philadelphia Works	8	Piqua Works	4
Midland Works	6	Struthers Works	5
Canton Works	6		
Dennison Works	4	Total	71

The following works are nonunion, there being included eight mills in the Vandergrift equipment which are nearing completion, and are expected to be in operation shortly:

Nonunion Sheet Mills.

	Mills.		Mills.
Vandergrift Works	29	Wellsville Works	8
Apollo Works	6	Canal Dover Works	9
Hyde Park Works	5	Scottdale Works	8
Saltsburg Works	4	Old Meadow Works	9
Leechburg Works	10		
Dewees Wood Works	11	Total	96

It is probable that most of these small mills, notably those at Canton, Dennison, Dresden and one or two other places, will be dismantled and removed to the Kiskiminetas Valley. At the Hotel Lincoln conference in Pittsburgh, on July 13, Persifor F. Smith, acting for the American Sheet Steel Company, offered to sign the scale for the W. Dewees Wood, Wellsville, Old Meadow and Saltsburg mills, and also for all other sheet mills for which the scale had been signed before. This will give an idea the losses the Amalgamated Association have sustained in the sheet mills.

In the Steel Mills.

The Amalgamated has lost all the mills of the National Steel Company for which the scale had formerly been signed, except the Mingo Junction works, at Mingo Junction, Ohio. While it is not generally known, yet it is a fact that when the Shenango Valley works, at New Castle, starts up this week, it will be as a nonunion mill and the men will have to return to work as individuals. The nonunion mills of the National Steel Company, where organized labor is not recognized in any way, are as follows: The Ohio works, at Youngstown; the Shenango Valley, at New Castle; King, Gilbert and Warner works, at Columbus; Bellaire works, at Bellaire, and Buhl works, at Sharon. In addition the Joliet and Bay View mills of the Federal Steel Company will, in the future, be nonunion. From the above it will be seen that the Amalgamated has sustained some serious losses, and with the internal dissensions that exist in its ranks the association is in a very perilous condition.

The Last Conference.

The conference at New York on Saturday, September 14, at which the strike was declared off, was between the officials of the Amalgamated Association and the three constituent companies of the United States Steel Corporation, these being American Tin Plate Company, American Sheet Steel Company and American Steel Hoop Company. The National Steel Company, or the National Tube Company, were not represented in the conference and no action was taken as to their mills. C. M. Schwab, president of the United States Steel Corporation, was not present at any of the conferences, the settlement of the strike being left entirely to the officials of the three constituent companies named above.

A very important feature in connection with the settlement of the scale is that in the agreement made between the Amalgamated Association and the American Sheet Steel, the American Steel Hoop and the American Tin Plate Company, the scale will hereafter be recognized as a contract between the Amalgamated Association and the three concerns named above, and this will

prevent the Amalgamated Association from breaking faith with all the concerns, should trouble arise with any one of them in the settlement of the scale in the future. It was the desire on the part of the officials of the constituent companies of the United States Steel Corporation to prevent a repetition of the contract breaking done this year by the Amalgamated Association when it shut down the mills of the American Tin Plate Company, the Federal Steel Company and the National Steel Company because of a dispute in the settlement of the scale for the hoop and sheet mills. There will be no chance for contract breaking in the future, as under the terms of the agreements made contracts have been drawn and recognized as such by both sides. While the strike has been officially declared off by President Shaffer, he had not, up to Monday evening, furnished the men with a statement of the conditions surrounding the settlement of the strike and many of the men were at a loss to know whether to return to work or not. There is a bitter feeling against President Shaffer and other officials of the Amalgamated Association, and some startling changes in its officers before long are very probable. The men who went out on a sympathy strike and who are members of the American Federation of Labor have lost one to two months' work and will not get any strike benefits. In addition, many of them will lose their positions. It will probably be a week or ten days before all the idle mills get started, but it is the intention to put the mills in operation as fast as possible. It is probable that most of the tin plate mills, also the New Castle and Bellaire works of the National Steel Company and the Bay View and Joliet works of the Federal Steel Company, will be started this week.

The Continuous Scale.

We understand that there was brought up for consideration at the conference the question of adopting a continuous scale and that the representatives of the Amalgamated Association expressed themselves in favor of the adoption of some well matured scheme which shall avoid the recurrence of the danger of annual contests. No such proposal was actually adopted, the scale being signed for the current scale year.

It is probable, however, that there will be embodied in future agreements a clause which shall require either side to give three months' notice of the termination of the agreement, and that work shall continue undisturbed during that period, which is to be employed in arranging terms for a settlement.

So far as the Amalgamated Association is concerned such a continuous scale would put an end to the annual mass meeting, which is so expensive and cumbersome.

The Illinois Steel Company.

CHICAGO, ILL., September 16, 1901.—The Joliet Works of the Illinois Steel Company resumed operation in part on Friday, 13th inst. The strikers were given until 6 o'clock on the previous day to state whether they would return to work or not. A committee waited on the superintendent and advised him that they would like the time extended until Friday afternoon, as they had sent a committee to confer with President Shaffer and other national officers of the Amalgamated Association and that the committee would not return until the following morning. The extension was granted and in the meantime the committee returned with permission from the Amalgamated Association to return to work. This action is understood to have been taken by the officers of the Amalgamated Association under pressure from the Joliet workmen, who had decided that they would continue the strike no longer. The converting department and the blooming and billet mills were started and are in operation this week. It is expected that these departments will be operated for a week or so to secure a stock of billets before starting up the rod mills and other finishing departments. This ends the strike in the works of the Illinois Steel Company.

The Great Western Works of the American Tin Plate Company, at Joliet, are expected to remain closed indefinitely in accordance with a notice which has been posted on the gate at the works. In this notice the men are advised that the works will not be put in operation again this fall.

PITTSBURGH, PA., September 18, 1901.—(*By Telegraph.*)—The idle mills of the American Sheet Steel Company, the American Tin Plate Company, National Steel Company and the American Steel Hoop Company are rapidly getting started, and before this month is out it is probable that all the mills of the constituent companies of the United States Steel Corporation that are in shape to run will be in full operation. President Shaffer has not yet given out his promised statement as to the terms under which the strike was settled, but claims that he has notified the lodges. There is a good deal of feeling against Shaffer, and it would seem his position is in jeopardy. The National Tube Works, at McKeesport, are in full operation, but affairs at the Riverside plant in Wheeling are still unsettled.

PERSONAL.

George M. Hunter has been appointed superintendent of the Youngstown works of the American Bridge Company, Youngstown, Ohio, to succeed E. M. Scofield, resigned.

Carl Kaletzky has been appointed freight agent for the Republic Iron & Steel Company, with headquarters at Youngstown, Ohio.

J. F. Adams has been appointed secretary of the Wheeling Board of Trade, in Wheeling, W. Va., to succeed S. A. Thompson, resigned.

Henry C. Frick, who has been in Europe since June, returned to Pittsburgh last week.

Alan W. Wood of the American Sheet Steel Company has returned to Pittsburgh from Europe.

F. W. Hoffstot, president of the Pressed Steel Car Company of Pittsburgh, returned from Europe last week. Mr. Hoffstot is also president of the Transportation Development Company, an identified interest of the Pressed Steel Car Company, and with headquarters in London, England. While abroad Mr. Hoffstot gave a dinner to the resident engineer and the office staff of the Transportation Development Company, which was served in the York room at the Holburn restaurant, London.

Spencer Miller, engineer with the Lidgerwood Mfg. Company of New York City, sailed for Europe recently and will attend the trials by the British Admiralty of his marine cableway. The task set by the Admiralty is 40 tons of coal per hour to be transferred from ship to ship, speeding at 10 knots.

J. I. Lyle, who for the past five years has been connected with the home office of the Buffalo Forge Company, and later was New York State representative, with headquarters at Syracuse, has been appointed manager of their New York office at 39-41 Cortlandt street.

Charles Henry Howson, 38 Park row, New York, has become a member of the firm of Howson & Howson, the well-known patent attorneys of Philadelphia.

John W. Gates has returned from Europe.

Harry H. Cockley, secretary of the Shelby Steel Tube Company of Cleveland, Ohio, has tendered his resignation, which has been accepted, to go into effect on October 1. Mr. Cockley's future movements are as yet undetermined, but he will undoubtedly connect himself actively with some branch of the steel industry.

W. E. Corey, president of the Carnegie Steel Company at Pittsburgh, has leased the residence of Attorney-General Knox in that city. It is one of the most beautiful homes in the East End.

Guy R. Johnson, formerly superintendent of the blast furnaces of Carnegie Steel Company, at Duquesne, Pa., has resigned. His position is being filled by Max Shiras, formerly connected with the Dominion Iron & Steel Company, Cape Breton, Novia Scotia, Canada, but who resigned some time since to become assistant to David G. Ker, who has charge of the ore interests of the Carnegie Steel Company.

Ralph B. Montgomery, formerly private secretary to Charles M. Schwab, president of the United States Steel Corporation, is now representing H. W. Johns Mfg. Company, in Pittsburgh, with offices at 220 First avenue, in that city.

Some Aspects of the Labor Question and Shop Ethics.

EGBERT P. WATSON, ELIZABETH, N. J.

During the past few months the business of this country has been harassed and generally disturbed by labor questions to a greater degree than ever before, and is still unsettled. The principal disturbances turn upon the amount of wages and the number of hours which shall constitute a day's work; in connection with these are other contentions as to the management of works and the relation of one trade to another as regards what are called sympathetic strikes, so that taken as a whole "it is a very pretty quarrel as it stands" and one not easy to settle. It requires careful study of all the conditions in all trades, not for one trade or handicraft but for wage workers everywhere.

Every contention has two sides, for and against, and no argument is sincere that does not weigh each proposition fairly from commercial standpoints, sentimental claims having no status.

Suppose, for the sake of arriving at some conclusion, we take a few of the propositions advanced by wage earners which require readjustment, and consider them upon their merits—shorter hours for instance. What do we find? The legal number of hours to constitute a day's work in this country is ten, with an hour's intermission at noon; is this beyond the physical ability of an able bodied man? The majority did not think so until the question was raised by the minority and made a part of the issue; even then it was not favored until the same rate of pay was claimed for the shorter day. The injustice of this is apparent, if we reverse the proposition and apply it to wage earners and their interests. For example: A workman rents a house and pays a certain sum for 12 months' use of it. At the expiration of that time the landlord says that the rent for the ensuing 12 months is the same as before, but that only 11 months shall constitute a year. What would the workman say to this? Possibly that 11 months is not a legal year, to which the landlord answers that it is to him, so far as renting houses is concerned, and that is the only aspect of the case that he will consider. Here is an argument advanced which must be settled upon some basis.

Suppose, again, that the workman says: "I won't rent your house; I will go to some other landlord who gives 12 months for a year," and the landlord should reply: "I won't permit that; you must rent my house or get out of town; all of the landlords in the place have resolved that 11 months constitute a renting year so far as renting houses is concerned," and what are you going to do about it? The landlord is unjust, it will be said. Is not the workman equally unjust in trying to get paid for time not served? Men work for so much per hour and receive pay for whatever hours they may have worked. If they expect to be paid for ten hours they must render ten hours; if they expect 10 per cent. advance in wages the demand must be made upon that base, for no contract can be enforced legally where one party has received no consideration for his money.

Might Makes Right.

One of the most arbitrary and positive men I ever knew was a certain workman who insisted that might made right, and that he would assuredly enforce his demands whenever he could, regardless of the rights of others. In course of time this same man opened a small shop of his own, taking contracts as low as he could in order to get started. This very question was brought home to him in a way that he could understand, for his men insisted upon ten hours' pay for nine hours' work; then his arguments were all upon the other side, for he found that with the 20 men he had at work he was losing 20 hours a day, or about 12 days out of the week for the whole force, and that meant ruin swift and sure. Twenty men is a very small complement; multiply it by 20 more and the loss by one hour less a day mounts up rapidly.

Concerning the policy of the management the contention is that the workmen shall have a share in it, at least so far as the number of apprentices taken is concerned, and the character of the work given to each workman; it is also contended that the pay shall be equal for all journeymen in the shop, regardless of skill, and that no one shall be discharged for cause. If he is the whole force will stop work until he is reinstated. As these propositions embrace practically the right to run the works to suit themselves it will be seen that, if they are conceded, the lawful owners have delivered their property over to the workmen, what remains to them being only the nominal management, the conditions of which have been fixed by the workmen wholly in favor of themselves. They will allow only members of their society in the shop, who may work as they please and are assured constant employment with no responsibility to any person whatever. Very good. Now let us see how this method would work in the domestic microcosm. The workman's wife announces to him one day that since she is an equal partner in the concern he is hereafter to place all of his earnings in a box on the shelf where each member of the family can have access to it as he or she pleases. Further: That no member of the family is to be called to account for anything he or she may do. If they are idle, disobedient and wilfully neglect their duties toward each other, they are to have just as much consideration and as many privileges as if they were exemplary in all respects; that she (the wife) did not care what the workman's rights were as the head of the family and the one responsible in the eye of the law—she intended from that time henceforth to be a law unto herself, and he might do what he chose about the situation. If this ultimatum was pronounced as it is written here, it will be seen that social anarchy would reign thenceforth in that workman's home, but precisely this condition of affairs is liable to exist in workshops if the management of them is delivered over into the custody of those who have never had any experience whatever in business matters. Mark that no request is made that the workmen shall have a voice in the conduct of the works, but a flat demand is presented, usually by a so-called shop committee, who, appalled at finding themselves inside the office, away from vise benches and familar objects, sit or stand mum-chance, without power to alter the edict they bear one jot or tittle. The cases of the workman and his family and the management of the works are exactly parallel. With no colorable pretext therefor the workmen demand that co-operative inerests shall be instituted at once; no suggestions are made, setting forth the fact that if their proposition is considered in due course they will be able to contribute materially to a much greater output upon a given capital, and will, in that way, purchase the right to a voice in the management of the concern. In lieu of this, which is a plain business proposition (whatever may be said of the propriety of it), there is simply the "stand and deliver" of the highwayman! Suppose the managers of the works should assume a similar right to dictate to the workman how he shall carry on his domestic affairs, would he receive it with consideration and act upon it within 24 hours? Probably not.

Here is another aspect of this subject of management and control which may be considered in the interest of the workman purely, for I am not an essayist, writing from the point of view of a social problem, but have earned my living for years, in times past, with hammer and chisel and file at the vise bench, in the engine rooms of shops and ships, and have heard all the arguments which the shop orator is able to advance, so I am not a novice, but am able and willing to consider all sides.

How is it that the workingman never takes thought of his own weakness and unfitness for the campaign he is about to embark in? I have often urged bodies of men about to strike, or considering the feasibility of it, to reflect that they were going to argue upon aspects of a case that they knew nothing about, and (in this argument) pitted themselves against men who had spent their lives in mastering every point likely to come up. Aside from the uncertainty of their projects, one urging this

scheme and another that, they had no show against lawyers and men of affairs who had been consulting authorities and precedents and knew where they were coming out before they started in, whereas the men were like persons plunging blindly into a wilderness, devoid of chart or compass. The only answer to this caution would be an assertion that they knew what they were about, but later events proved that they did not. Take the case of the Amalgamated Association, for instance, measuring swords with such men as Morgan, Schwab, *et al.*, upon the right to dictate how certain properties belonging to a powerful corporation should be carried on! The futility of such an undertaking should, it would seem, have struck the least intelligent man of the association, but nothing could convince them of their inability to comprehend the situation short of actually bucking against it.

This is, in point of fact, the trouble all along the line of the strike question; the men do not in the least comprehend the situation as it affects their own pockets and future. In general the question of wages is not the whole issue; in some instances it is, but of late the argument between employers and the employed has embraced other features which are so harassing that it is a matter of doubt with some whether business men have any rights at all; what few remain to them are so covered with restrictions and demands that it requires much study to avoid disaster. "Must" and "shall" are the terms most frequently employed in discussing the conditions, and all of them are mandatory and coercive in tone so far as the employers' rights are concerned. The conditions sought to be imposed gravely traverse rights assured to every person in this country—one of them being to conduct his own affairs to suit himself—and there is no branch of manufacturing that is not in some way hampered by the claims of so-called union men.

Since I began to write this article a master carpenter informed me that he was standing in the door of his shop a few days ago, when a rough looking man, much the worse for some artificial support, stopped and asked him if his was a union shop! "None of your business," was the reply. "Who are you?"

"I'm the walking delegate for this district," was the reply, "and you had a right to answer my questions, or I'll make it hot for you."

"Well, I won't answer your questions, and you can make it as hot as you like right now" (the master carpenter is 76 years old) "if you want to," but the issue was declined, and the W. D. went about his business of bullying a weaker-kneed man.

Dictation and Coercion.

When it comes to dictation and coercion put the shoe on the other foot and see how it fits. Suppose employers get together, form a coalition and have a law passed that all workingmen should be subject thereafter to their convenience, that the men working for Jones & Co. should be transferred without notice to the shops of Robinson & Co., and put in a day's work wherever they were ordered to regardless of their own wishes or welfare, does any one think that such a law would be obeyed? Not in one single instance, yet it is in no degree more absurd and exacting than the stipulations which are demanded as rights by unions. Even the public who have no interest whatever in labor questions, and no affiliation with them in any relation of life, are told that they must not purchase certain goods that do not bear a union label, or, if they do, private vengeance and retaliation will be taken upon them in a way that they will feel. If such acts as these are lawful and tolerable it is time that the people understood it, and both the Constitution and the title of the country changed to the United-Union States, and all of us wear union labels, so we can walk the streets unmolested!

A Fair Day's Work for a Day's Pay.

Thus far I have traversed only the objectionable features of the labor questions now before the people, and it is anomalous, from the fact that by far the greater part of the handicraftsmen of this country are nonunion, the minority rules in this case for two reasons, chiefly, one of which is that workingmen as a rule are peaceful and law abiding and do not want to be called upon to maintain their rights by force of arms; another reason is that union men are sustained in their aggressions against the community in general by petty politicians, who need all the votes they can get, and also by a certain meretricious fraction of the daily press, who misrepresent the people's cause and encourage the lawless element in their encroachments. Were it not for this support the turbulent element would go out of business in 24 hours.

I have used the word "encroachments" in speaking of some of the acts committed by unionists, but usurpation would be nearer to the nature of the deeds done by those who claim that their rights are paramount. The Constitution of this country says that we have equal rights to "life, liberty and the pursuit of happiness." but it will have to be amended to read: "Provided that the said citizen or citizens of the United States shall be members of some labor union," &c., for it seems that if some desire to work without belonging to unions they are denied the right to do so, and personally molested when they insist upon their privilege. So great is the tolerance of view in this country that up to the present but few have insisted upon their lawful domain, preferring apathetic indifference to active warfare and riot, for that is the issue presented; but it is not to be expected that American citizens will tamely submit to be defrauded of their birthrights by a few men who pretend to believe that the minority rules. "An injury to one is an injury to all," is a motto used by the aggressors, and it is true, but not in the sense that they intend it, for encroachments upon the personal liberty of any man in this country is an injury to the whole country. There is a way by which associations of workmen can be of very great service to the community and directly to themselves. If they would confine themselves strictly to their legitimate spheres they would also advance the interests of the particular branch of trade they follow, and might then with some show of right, justly claim increased wages and a voice in the management. It is easy to see that if the conduct of the works was assured in the interests of all, employer and employed, the losses would be lessened very much and profits, as a corollary, greatly increased. This plan is simply for each man (let him be union or nonunion, whatever he likes) to be ordinarily commercially honest; let him render a fair day's work for a day's pay, avoid losses in time and material as he would if the waste came out of his own pocket, and the thing is done. In such a shop Utopia each man would be his own foreman, so far as oversight is concerned, and the question of wages would never come up, or, if it did, the questioner would soon depart for another shop where the conditions as regards ability were more equal. It may be urged in reply to this view of the case under discussion that it presupposes impossible conditions of human nature; men are of average honesty only, which means that some are dishonest and will take an advantage wherever they can, but I do not admit that it is ever necessary to employ the latter. In support of this I can cite plenty of shops that employ large numbers of workmen, that have been in existence for many years but have never had the semblance of a strike or the least sympton of disaffection; shops that all through the present labor troubles have kept right on turning out work the same as if there were no disturbances whatever. As a rule no men in this country are more honorable in their dealings with their fellow men than workmen; they simply wish to earn an honest living by their skill, and they advance in life, not, as the disaffected claim, by being boosted into positions, but simply because they cannot be kept out of them. All the boosting in the world will not maintain a man in a place he cannot fill through natural ability to hold it.

Shop Management.

Now why are not all the shops in the country of the same class, independent of labor troubles? It is not easy to answer this categorically. There are various reasons; some of them attach to the management of the shop itself. All men of all degrees of temperament are hired as they offer, and this I count as a mistake. One loud mouthed, versatile ruffian—there is no other name for him—a man who is contentious, boastful, "mussy," very

able with his tongue but weak in his work, can make more trouble and hinder the work to a greater extent than six men who are only slow, but mind their own business withal. I never could see why such men are employed, and I have myself discharged them when unfortunate enough to have been saddled with them. There is no more reason why there should be disorderly persons in a shop than the same class in the drafting room. In either place they are incumbrances to be got rid of as speedily as possible.

There is something wrong with the foreman of a shop who engages objectionable help. He is, in a sense, a disaffected man himself. "Birds of a feather flock together," says the adage. Given a shop where the work progresses by fits and starts, and the foreman looks on amused at some horse play, that is the shop that will have trouble, sooner or later. Volumes can be written upon shop management and yet leave much unsaid; managers are born, not made, and the concern which has one of this class is to be envied, but, I regret to say, they are not always appreciated. No one knows the able manager better than the idle workman, and he seldom stays long in a place where the atmosphere is uncongenial to him.

I do not think that the system which has obtained in many shops of late—that of providing ultra refined surroundings and comforts for work people of both sexes—has much to recommend it as a feature of management. It is certainly admirable from a philanthropic point of view, from sanitary aspects as well, but as a question of policy in the administration it may be a mistake. It must be remembered that the help in a shop where both sexes are employed embraces all sorts and conditions of men and women. Many—should I not say most?——of them have been brought up in and under adverse domestic conditions; they have felt the sharp sting of poverty, actual want perhaps, and have schooled themselves to endure it as part of their lot, or what is likely to fall to them as their share of life as they understand what life means. To bring such persons in contact with what are to them luxuries and refinements of living is not to raise them to a better life, to induce them to follow it in their own homes, but, strange as it may seem to those who have been born to higher stations, the result of humanizing the conditions of life in the shop is to breed a resentment in them of the surroundings which were intended solely for their benefit.

I well remember the expressions of a number of shop girls who were invited to the house of a wealthy lady every week, she providing music and entertainment of various sorts in the belief that she thereby elevated them. To her surprise and sorrow her efforts failed; after a few evenings the visits ceased—when the novelty had worn off—and the experiment failed. This lady was surprised and wished to know if I could throw any light upon the subject, and I said I could. I told the lady that, for one thing, the work girls were too tired with their labor to enjoy music or the kind of relaxation she offered them; moreover, her surroundings as to furniture and her social status oppressed them so much that it was no pleasure to them to visit her. They were ill at ease and never desired any such refinements as she possessed; her environment stifled them and they repudiated her and all her works. Early associations, in a great measure, shape the lives of individuals, and it is almost impossible to reshape them by change of surroundings, particularly when those who are sought to be benefited do not desire any change. In one of the shops in this country, where everything possible to think of for the comfort and convenience of the work people had been provided at the expense of the proprietors of the works, the whole force went out in a body at the behest of a few disgruntled men who had undertaken to dictate the management of the concern. This shows, for one thing, that trying to ameliorate the conditions of labor does not insure their loyalty.

What course shall be pursued to convince the few who disturb the social and commercial balance by overt acts that they are wrong in all their premises and conclusions—not only the actual participators, but their aiders and abettors who encourage them? It is not easy to say. There are plenty of laws covering the situation, which are defied daily; the difficulty lies in enforcing them. Injunctions against doing this and that are issued by the courts, and the officers, civic and otherwise, either refuse to serve them or else set up arguments as to their constitutionality; meanwhile the lawlessness goes on and those who want to work cannot. One so-called leader after another arises and disappears, leaving behind him nothing but odium upon all sides. But one man out of all the alleged champions of the rights of labor retains the respect of the people, and he has held it through pursuing a conservative course only. From Kearney of a quarter of a century ago, Martin Irons, Eugene Debs, *et al.*, down to the present dictator to the people of this country, there is only one man who has been of any real benefit to the trade he represents, and that man persistently opposes the methods of the present agitators.

Is it not pretty near time to call a halt and find out whether this country is for all of the people or only a part of the people—whether those who want to work shall be allowed to do so, without the assent or dissent of those who do not want to work, pretending that the settlement of moot points rests wholly with them? I think it is. Upon every other point of difference of opinion men take their cases into court and settle them quietly, but when labor questions arise the unwritten law is that Jack may stop Jill in the street and assault him physically and verbally, in any way desirable, and prevent him from earning a living! The courts have not always done their plain duty in these cases: some magistrates have, but if the settlement of the labor question rests with them it will remain some time in abeyance. But one of these days the people will decide that they have been annoyed and harassed long enough; there will be no appeal from their verdict.

Canadian News.

Dominion Aid to Shipbuilding.

TORONTO, September 13, 1901.—If the large projects lately agitated for the building of steel ships do not come to anything, it will not be for want of public assistance. In the last letter of this correspondence it was shown how liberal the help for which provision has been made by both the province and certain of the leading municipalities in Nova Scotia. Nor is this likely to be all. The Dominion is expected to make a generous contribution. Two of the Federal Ministers have spoken in a way to encourage this expectation since the Premier of Nova Scotia announced that his Government would grant $100,000. Hon. J. Israel Tarte, Minister of Public Works in the Dominion Government, made a speech in Toronto on the 2d inst., on the occasion of the launching of the Government dredge from the yards of the Polson Company here. His most significant statement was as follows:

"The Government of the country, perhaps, might help. We have helped the iron and lead industries. I do not know whether the country would be willing that we should help the shipbuilding industry. It is a question to be thought over, and I for one invite discussion upon this point. What I say is we must have boats. We have spent millions upon our canals. I am spending a lot of money in improving the St. Lawrence. It will be in vain if we have not the boats to carry our trade through."

A still more important utterance bearing on the same subject was made a week later by another member of the Dominion Government, the Minister of Finance, Hon. W. S. Fielding. This is in the form of an interview filling two columns of the Halifax *Chronicle*, a paper of which Mr. Fielding was formerly the editor. Being himself a Nova Scotian, having, in fact, been Premier of the province, he naturally takes a keen interest in its material development. It was under his administration that the coal lands of Cape Breton were leased to the Whitney syndicate, and that that syndicate was formed into a company. In the interview referred to he spoke with satisfaction of the shipbuilding enterprises now flourishing at New Glasgow, N. S.; Sorel,

Quebec, and Toronto and Collingwood in Ontario. On the general question he said:

"I think the possession of a considerable fleet of steel ships is of the utmost importance to Canadian trade. If we can build them ourselves, so much the better. The carrying trade of the world remains to be done, as before, and we know we cannot do much with wooden ships. There has been during the last two or three years a revival of wooden shipbuilding along our coast, but the vessels in nearly all cases have been of small size. For fishing vessels, and occasionally special service in the carrying trade, where larger tonnage is needed, we shall still find employment for our wooden shipbuilding industry; but if we are ever to engage in the carrying trade of the world, of which we formerly had so large a share, we must have steel vessels to do it. It would be better that we should buy them abroad than to be without them; but it would be still better to build them ourselves, if that would be feasible, and I have a strong hope that we shall gradually do so.

"If any aid were given by the Government it would have to be given on some general plan which would apply equally to ship yards on the coast and ship yards on the lakes. It is not generally known that the Government already aids shipbuilding to a moderate extent. There is a bounty, or, to be more exact, a drawback, on ships and vessels constructed in Canada. This drawback varies according to the class of ships. But a difficulty arises here as respects ships constructed wholly or chiefly from materials produced in Canada. In that case, no duties having been paid by the shipbuilder, there would be no basis for drawback."

Steel and Iron Bounty $3,000 a Day.

W. G. Parmelee, Deputy Minister of Trade and Commerce, returned to Ottawa a few days ago from the maritime provinces. His is the department of the Government that has to do with the disbursing of the bounties earned by manufacturers of iron and steel, and it is to regulations prescribed by that department that works making claims for bounty must conform. He called at the works of the Dominion Iron & Steel Company, Sydney, Cape Breton, in his official capacity. Speaking of the matter, the Deputy Minister remarked that the capacity of these works when completed would be 1500 tons a day. Allowing for repair delays, the product can be safely set down at 1000 tons a day, which will call for a bounty of at least $3000 a day. The magnitude of the company's operations is indicated by the fact that they have 2300 men on their pay roll.

Nova Scotia Steel & Coal Company.

The Nova Scotia Steel & Coal Company, whose steel works are at Trenton and coal works at Sydney Mines, are said to be paying considerable attention to the development of their coal areas in Cape Breton. Hiram Donkin, late resident manager of the Dominion Coal Company, is now in the employ of the Nova Scotia Steel & Coal Company, and is engaged in preparing plans and specifications for the construction of a large shipping pier at North Sydney. It will be 67 feet high and 500 feet in length, and it is claimed that it will be the finest on the continent. It is to be equipped with apparatus of the latest design for the handling of coal; 600,000 tons, it is predicted, will be the company's output next year.

To Establish a Plant in Ontario.

Parties have been carrying on negotiations with the authorities of Toronto, Hamilton and Brantford for the establishing at one of these centers branch works of the company to manufacture for the Canadian trade. Louis F. Heyd, K. C., a Toronto man, appears to be acting for the parties. Fifteen acres of land are required, and about 2000 men are to be employed. Twenty available sites in Toronto were shown to the company's representatives when they were here some days ago, the Assessment Commissioner of Toronto having taken them about to look over properties. They have also viewed sites in Hamilton and Brantford. They have so far asked no favors, but appear willing to pay for the site and to bear their fair share of taxation.

Minor Notes.

A deputation of glass manufacturers from Indiana is expected shortly to visit this country in search of sites for new works. E. T. Holmes, Canadian Immigration Agent in that State, has advised the Government of their intention to come. The decline in the supply of natural gas in Indiana is given as a reason for their desire for a change.

A deputation of Canadian agricultural implement manufacturers waited on the Dominion Government last week to urge an increase in the duty on the implements of foreign competitors. All the leading men in the industry were present. C. A. C. J.

MANUFACTURING.

Iron and Steel.

The Banfield Works of the American Tin Plate Company, at Irondale, Ohio, are being practically dismantled, the mills being removed to another works. The wash house and tinning department will be allowed to remain and will be used to coat the plate made in the new tin plate plant at Chester, W. Va.

The Pittsburgh Steel Company, with offices in the Ferguson Block, Pittsburgh, and who will build a steel plant, rod and wire mills at Monongahela City, have placed a contract with the American Bridge Company for their steel buildings. The main building, in which will be located the wire and nail departments, will be 1200 x 170 feet; the galvanizing and barb wire building will be 800 x 120 feet; rod mill, 350 x 190 feet; cooperage department, 200 x 90 feet; boiler house, 450 x 60 feet; machine shop, 250 x 70 feet, and the electric plant, 70 x 40 feet.

The Parkersburg Iron & Steel Company of Pittsburgh, who are building a four-mill sheet plant at Parkersburg, W. Va., and which will be ready to run in October, have decided to add two more mills. Foundations for these are in and the whole six mills are expected to be turning out sheets by the middle of October.

Active work has not yet been started on the crucible steel plant to be built by William Jessop & Sons, Limited, at Washington, Pa. After the ground was purchased it was found that part of it was flooded each year, and this made it necessary to rearrange the plans for the buildings. It is stated that active work on the building of the plant will be started in a short time and that it will be ready to turn out the well known brands of Jessop crucible tool steel early in the spring.

The New Castle Iron & Steel Company, recently organized at New Castle, Pa., will build a plant at that place for the rerolling of old rails. The concern have given a contract to the United Engineering & Foundry Company of Pittsburgh for a 12-inch and 18-inch mill. A number of scrap iron dealers of Pittsburgh and Cleveland are interested in the new concern.

W. H. Griffiths, who recently sold his interest in the Washington Charcoal Iron & Tin Mills, at Washington, Pa., to McClure & Co. of Pittsburgh, will build a new tin mill at Washington, to contain either three or four mills.

At Pittsburgh James J. Donnell, surviving trustee of the estate of Alexander Nimick, a former iron manufacturer of Pittsburgh, filed his report in the courts. He charges himself with $649,966.88 and claims credit for $485,955.24, leaving a balance of $164,211.64. From this he asks leave to retain $14,211.64 for the purpose of meeting expenses likely to arise, which would leave a balance for distribution of $150,000. Among the items the trustee charges himself with are the following: Appraised value of the property of Nimick & Co., $386,894.79; property of Alexander Nimick, $239,983.57; property of George P. McBride, $11,250. Among the credits are: Paid to National Bank of Sharon, $34,539.30; to the Real Estate Savings Bank, $7000; loss on Ella Furnace property, $79,686.26; loss on Kemble Iron Company account, $143,280.20.

The Duncannon Iron Company, Duncannon, Pa., have advanced the wages of the puddlers from $3.75 to $4 per ton, taking effect September 16.

The Inland Steel Company, Marquette Building, Chicago, are making rapid progress in the preliminary work of erecting their new steel plant at Indiana Harbor, Ind. All the foundations for the buildings have been completed, and construction will be pushed as speedily as material can be received. Contracts for nearly all the machinery have been placed, and it is expected that by the time the buildings are completed shipments of machinery will be received for installation.

The American Engineering Works, Marquette Building, Chicago, are now erecting a building which will be specially used for the manufacture of forgings on the property recently acquired by them at Carroll and San Francisco avenues. The building will be of steel construction and will cover a ground space 60 x 100 feet. It will be equipped with three steam hammers, of 3000, 1500 and 800 pounds respectively. The shop will also contain the most approved style of heating furnace. The merits of oil and stoker fired furnaces are now being investi-

gated with a view to determining which presents the greater merits. The contracts for the building and machinery have been awarded and it is expected that the shop will be ready for operation in two to three months. The company are turning out forgings in their present plant, using an 800-pound hammer. When the new shop is completed they will be able to handle all classes of forgings, from the smallest up to a 14-inch shaft.

Rosena Furnace of the National Steel Company, at New Castle, Pa., was started up last week. The Shenango steel mill of the same concern was also started this week.

The Shelby Works of the Shelby Steel Tube Company, at Greenville, Pa., are to be very much enlarged and the capacity about doubled. It will be recalled that this concern were recently taken over by the United States Steel Corporation, and it is probable the plants of the concern will be centralized as much as possible.

The Cambria Steel Company, Johnstown, Pa., will soon begin the erection of a very large universal plate mill. It is said this mill will be capable of rolling up to 1½ inches thick and 108 inches wide.

John W. Steacy, proprietor of the York Rolling Mills, York, Pa., has posted a notice that there will be an advance of 25 cents per ton, to take effect September 23. This will mean $4 per ton to the puddlers. This is the second advance they have had within the past few months.

General Machinery.

Boyts, Porter & Co., Connellsville, Pa., builders of mine pumps and machine supplies, are very busy and have a large amount of work on hand.

The Pacific Engine, Pump & Machine Works, Tacoma, Wash., have been incorporated with a capital stock of $500,000, by W. H. Boothroyd, Charles I. Holman, R. F. Laffoon, Edgar Courtwright and Daniel G. Holman. The company propose to build engines, pumps, cars, locomotives and to construct deep sea vessels and supply them with machinery.

The machine shop and foundry of R. S. Putman, at Mendon, Mich., was last week destroyed by fire; loss about $5000.

The Carbondale Foundry & Machine Company, Carbondale, Ill., who were organized June 1, this year, do a general repairing business and carry supplies for the coal mines in the district. Later they expect to manufacture. They have put up a building, main part of which is 24 x 60 feet, with an L 24 x 30 feet. They are about to erect a molding room 25 x 56 feet. Since commencing they have received an encouraging amount of work, having been running time and half.

Ira B. Smith, 70 Main street, Bristol, Conn., machinist, has purchased the land of the Wallace Barnes Company, in the rear of their factory in that city, and will have erected at once a two-story building, 38 x 40 feet, which will give the room necessary for his rapidly increasing business.

The Champion Blower & Forge Company, Lancaster, Pa., have made additional general improvements to their plant during the past month, and now have every department working to a high degree of perfection. The capacity of the plant has thereby been increased more than 100 per cent. Inquiries and orders for blowers and forges have been numerous both from domestic and foreign sources, and shipments for export and for domestic deliveries have been large.

The improvements under way at the Vulcan Iron Works, manufacturers of locomotives and mining machinery at West Pittston, Pa., consist of a new cupola house and two new cupolas complete with stock hoists, &c.

Engines and Boilers.

The strike at the shops of the Watertown Engine Company has terminated in the complete surrender of the men, who have returned to work at the old wages and the old hours. For the 14 weeks during which the strike lasted the company entered no new orders, employing the small force of nonunion men entirely in finishing up orders previously entered. With the resumption of work orders have come in with gratifying promptness, and their shops are again full of work. They have just completed an installation of 1000 horse-power for the Oxford Paper Company at Rumford Falls, Maine, and are now at work on an 800 horse-power plant for the Remington-Martin Company at Norfolk, a 400 horse-power for the Eastern Lumber Company of Tonawanda, 300 horse-power for the Raymondville Paper Company, 400 horse-power vertical cross compound high speed engine for the Mare Island Navy Yard, 250 horizontal tandem compound for the Ohio State University, and a considerable number of other smaller high speed engines.

Foundries.

The foundry and machine shops of Moore & Butts, founders, at West Newton, Pa., were recently burned, with an estimated loss of about $10,000.

On account of the fact that the space devoted to floor molding has been entirely inadequate to the demands of the business, and in order to relieve the works at Canal and Judd streets of some of the heavy work, the Crane Company of Chicago have this summer erected at their works at Jefferson, Van Buren and Desplaines streets a foundry which is to be devoted exclusively to very heavy work—i. e., flanged fittings and large valves. It is a one-story brick building with a slate roof, and is equipped with two cupolas, an electric traveling crane, and every other modern convenience. This new foundry will increase the Crane Company's capacity for very heavy work about 50 per cent., and it is expected to be in operation in about 30 days.

The foundry of F. N. Peter & Bro., iron fence builders and founders, Newside, Pa., suffered a $5000 loss by fire recently, which is fully covered by insurance.

Hardware.

The Wrightsville Hardware Company, Wrightsville, Pa., are extremely busy in every department of their plant. General inquiries and orders have been numerous, the foreign demands being very active. Grindstone fixtures and well wheels are being shipped in quantities to Cuba and South America, and hammers, hatchets and Mrs. Best's sad irons are being exported to London, Hamburg and Melbourne, Australia. Among recent domestic shipments may be noted one of 600 sets of Mrs. Best's irons for Seattle, Wash., and another to San Francisco, Cal. A solid carload of hinges was shipped to one party in the West and another carload of Queen tobacco cutters was shipped to the American Tobacco Company, Winston, N. C. The recent improvements in their plant, particularly in the polishing department, have materially increased their capacity and enabled them to make better deliveries on the various lines manufactured by them.

Miscellaneous.

The Mitchell-Wasson Coal & Coke Company of Blairsville, Pa., have been incorporated with a capital of $300,000.

The American Copper, Brass & Iron Works, now located at Michigan street and La Salle avenue, Chicago, have purchased a 10-acre tract of land at Wellington avenue and Paulina street, Chicago, on which they propose to erect a much larger plant. They are arranging for the completion of this plant early in the new year.

The Consolidated Mfg. Company of Pittsburgh have been granted a charter with a capital of $250,000. The company will manufacture steel novelties, including patent steel curtain hangers, iron fences, plating material and patent steel bottle stopper, which works on a thread to right and left and can be opened and closed instantly by hand. J. K. Skelly is president of the company; W. H. Sykes, treasurer, and V. H. Pettes, secretary. The works of the firm are in McKeesport, Pa.

The Tennessee Company.—It is expected that the new rail mill of the Tennessee Coal, Iron & Railroad Company at Ensley, Ala., will be rolling rails in December. A number of orders were taken some time since, but no others will be booked until the mill is in regular operation. There has been considerable gossip concerning new additions to the Ensley plant. While it is true that these have been under consideration, nothing has been decided as yet. Thus the talk of additional stationary open hearth furnaces is unauthorized. It is probable and natural that the Tennessee Company will develop in the line of finishing their steel product by making bars, hoops, sheets, &c., but as yet nothing is settled. The Tennessee Company have sold about $3,000,000 of a total authorized issue of $10,000,000 of bonds to liquidate floating debt and for treasury purposes. A part of the bond issue is set aside for canceling the bonded indebtedness when due. A part is for improvements. Not a bond for the latter purpose has yet been offered for sale.

At Pittsburgh James W. Arrott filed a bill in equity in the United States Circuit Court against the Standard Sanitary Mfg. Company, a corporation of New Jersey, doing business in Allegheny. Arrott claims an infringement of a patent for an improvement in dredges for pulverulent material. An injunction and accounting are asked for.

On October 1, A. Everett, manufacturer of metallic pattern letters and figures, will remove from Parksley, Va., into his new building at Auburn, N. Y., where a very extensive letter plant has been completed.

Adolf Bleichert, so widely known as one who was identified with the development of wire rope tramways, died at Davos, on July 29. He was born at Dessau, Germany, on May 31, 1845.

The German puddle mills threaten to go to law about the pig iron contracts made for 1901 delivery with the pig iron syndicate.

The Iron and Metal Trades.

Although resumption at the Western rolling mills is not yet universal, it is so general that the strike may be relegated to history. It will take some time before the Tin Plate, Tube, Sheet, Hoop and Bar mills catch up with their orders and normal conditions as to deliveries and prices are restored. The other branches of the finished trade have not been affected all along, and continue in the even tenor of their way.

The conditions surrounding the strike have of course somewhat obscured the situation, and have made it difficult to gauge consumption for some time past. For weeks to come it will be impossible to reach a really trustworthy conclusion on that point.

As matters stand here and abroad our home consumption must take care of our domestic product, because prices in foreign markets are considerably below parity in our own, and because European makers are showing a determination to take what work is coming up. Proof of this is cropping up every day, and virtually, in the heavy lines, the export trade has been practically dead for months. The only factor in our favor is the low rates of freight.

It will be readily understood, therefore, how closely any indications pointing to the development of our home consumption should be watched. Bessemer Pig in the Central West has ceased to have value from this point of view, because sliding scale contracts based upon the price of Bessemer Pig may render it desirable for powerful interests to influence the market. There is still much free play in Foundry Iron, which is only indirectly influenced by this situation. In this department reports of increased activity and growing firmness come from different leading distributing centers, although they must not be misinterpreted. For months a large proportion of the buyers have been purchasing very cautiously, until now they are facing the question of securing winter supplies. We seem to be on the eve of one of the periodical buying movements, which in itself is not necessarily proof of an enlarged consumption.

But when there are coupled with that buying of Pig Iron constant reports of a large current business in material for car builders, for shipyards, structural and bridge shops, for buildings and dwellings and for the many requirements of the farm and the factory, then we have a right to feel encouraged, in the face of assertions that "the boom is over."

A Comparison of Prices.

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Sept. 18, 1901.	Sept. 11, 1901.	Aug. 21, 1901.	Sept. 19, 1900.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia	$14.75	$14.75	$14.75	$15.50
Foundry Pig, No. 2, Southern, Cincinnati	13.00	13.00	13.00	13.75
Foundry Pig, No. 2, Local, Chicago	15.00	15.00	15.00	15.00
Bessemer Pig, Pittsburgh	15.75	15.75	15.75	14.00
Gray Forge, Pittsburgh	*13.50*	13.50	13.75	13.00
Lake Superior Charcoal, Chicago	17.00	17.00	17.00	18.50
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh (nom)	24.50	24.50	24.50	16.75
Steel Billets, Philadelphia (nom)	27.00	27.00	27.50	19.25
Steel Billets, Chicago, (nom)	.....	.....	.....	.....
Wire Rods (delivered)	36.00	36.00	36.50	38.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	30.00
Spikes, Tidewater	1.80	1.80	1.80	1.50
Splice Bars, Tidewater	1.50	1.50	1.50	1.35
OLD MATERIAL, PER GROSS TON				
O. Steel Rails, Chicago	**13.50**	13.00	13.00	9.50
O. Steel Rails, Philadelphia	**16.75**	16.50	16.25	12.75
O. Iron Rails, Chicago	**21.00**	20.50	20.50	12.50
O. Iron Rails, Philadelphia	18.50	18.50	19.00	15.50
O. Car Wheels, Chicago	*16.00*	16.00	16.50	15.00
O. Car Wheels, Philadelphia	16.50	16.50	16.50	16.00
Heavy Steel Scrap, Chicago	**12.50**	12.00	12.00	9.00
FINISHED IRON AND STEEL, PER POUND:				
Refined Iron Bars, Philadelphia	**1.60**	1.62½	1.55	1.25
Common Iron Bars, Chicago	1.60	1.60	1.55	1.35
Common Iron Bars, Youngstown	1.50	1.50	1.50	1.25
Steel Bars, Tidewater	1.60	1.60	1.60	1.20
Steel Bars, Pittsburgh	**1.50**	1.50	1.45	1.15
Tank Plates, Tidewater	1.75	1.75	1.75	1.25
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.10
Beams, Tidewater	1.75	1.75	1.75	1.65
Beams, Pittsburgh	1.60	1.60	1.60	1.50
Angles, Tidewater	1.75	1.75	1.75	1.55
Angles, Pittsburgh	1.60	1.60	1.60	1.40
Skelp, Grooved Iron, Pittsburgh	*2.00*	2.00	2.05	1.40
Skelp, Sheared Iron, Pittsburgh	*2.05*	2.05	2.10	1.50
Sheets, No. 27, Pittsburgh	*3.65*	3.75	3.75	2.85
Barb Wire, f.o.b. Pittsburgh	2.90	2.90	2.90	2.80
Wire Nails, f.o.b. Pittsburgh	2.30	2.30	2.30	2.20
Cut Nails, Pittsburgh	**2.05**	2.05	2.00	1.95
METALS:				
Copper, New York	16.50	16.50	16.50	16.75
Spelter, St. Louis	**3.90**	3.87½	3.80	3.95
Lead, New York	4.37½	4.37½	4.37½	4.37½
Lead, St. Louis	4.25	4.25	4.25	4.34½
Tin, New York	*25.90*	24.75	26.50	28.60
Antimony, Hallett, New York	8.50	8.50	8.50	9.50
Nickel, New York	60.00	60.00	60.00	55.00
Tin Plate, Domestic Bessemer, 100 lbs., New York	4.19	nom.	nom.	4.84

Chicago.

FISHER BUILDING, September 18, 1901.—*(By Telegraph.)*

The condition of trade exceeds all expectation. So many untoward events have happened within the last three months that a serious shrinkage in the volume of business seemed to be inevitable. We have had a destructive drought, a shortage in the corn crop, serious labor troubles and to crown all the assassination of the President. Notwithstanding these depressing influences trade has held up remarkably and the tendency is now toward a still better condition. The announcement of the new President's decision to continue his predecessor's policy has imparted a feeling of confidence to all business circles. The ending of the great strike will be a distinct benefit in many respects. It will especially give suffering branches of manufacturing industry a supply of needed material. The starting of the idle mills will not have any weakening effect on price, as the product of these mills will be needed for many weeks in filling contracts taken long since. It is believed that the necessities of the country will keep all branches of the Iron trade actively employed through the coming winter. The railroad companies are showing their confidence in the future by placing large contracts for all kinds of supplies. The Rail trade for next year is already assured. It will not be surprising if business continues in good condition until the approach of another crop season.

when the recollection of this year's experience may cause a feeling of uneasiness and a disposition to go slow until the crops are out of danger.

Pig Iron.—All commission houses report a larger volume of business. A great deal of the buying consists of medium quantities, but about 10,000 tons were placed under contract in lots of 1000 to 2000 tons. It is now about three months since the Pig Iron trade in this vicinity experienced any buying of moment, and it is time to expect business. Meanwhile prices have held up remarkably and stocks have been steadily reduced. The shortage of local furnace stocks and the general lack of supplies among foundrymen are shown by the strong demand for quick delivery. Spot Iron is in active request. Dealers who make a business of purchasing Iron to supply the carload trade report that they have no difficulty in disposing of everything ordered long before it arrives at Chicago. A better demand is observed for Soft Irons, which are much needed for early delivery. A great deal of inquiry is now in hand for all classes of Iron for deliveries covering the first half of next year. Some of the furnace companies are shortening the time for which they will take contracts and are refusing to book any orders for delivery beyond March 1. The outlook is so encouraging that an advance is confidently expected, particularly on Southern brands. We quote as follows:

Lake Superior Charcoal	$17.00 to $18.00
Local Coke Foundry, No. 1	15.50 to 16.00
Local Coke Foundry, No. 2	15.00 to 15.50
Local Coke Foundry, No. 3	14.50 to 15.00
Local Scotch, No. 1	15.75 to 16.25
Ohio Strong Softeners, No. 1	16.00 to 16.50
Southern Silvery, according to Silicon	14.90 to 15.15
Southern Coke, No. 1	14.65 to 14.90
Southern Coke, No. 2	14.15 to 14.40
Southern Coke, No. 3	13.65 to 13.90
Southern Coke, No. 1 Soft	14.90 to 15.15
Southern Coke, No. 2 Soft	14.15 to 14.40
Foundry Forge	13.15 to 13.40
Southern Gray Forge	12.90 to 13.15
Southern Mottled	12.90 to 13.15
Southern Charcoal Softeners, according to Silicon	15.00 to 16.50
Tennessee Silicon Pig	16.00 to 17.00
Alabama and Georgia Car Wheel	16.90 to 20.50
Malleable Bessemer	16.00 to 16.50
Standard Bessemer	17.50 to 18.00
Jackson County and Kentucky Silvery, 8 per cent. Silicon	15.75 to 16.25

Bars.—Car builders have been placing good orders, one company having purchased 3000 tons of Bar Iron and another 2000 tons. Other large interests have been liberal purchasers and the outlook is bright for continued business. The largest consumers have this summer been conservative in placing contracts for the future, as prices were $8 to $10 a ton higher than the same people were able to buy at last year. They will need much more than they have so far bought and inquiries show that they are about to increase their purchases. The manufacturers of Bars are, therefore, looking for an exceedingly active trade in October and November. The starting up of additional Bar mills hitherto closed by the strike is not regarded with apprehension, as it will take these mills a long time to fill orders already booked. Mill shipments of Bar Iron are quoted at 1.60c. to 1.70c., Chicago, for delivery this year, and 1.55c. for future shipments. Steel Bars are exceedingly hard to get as the supply of Steel is scarce. It is difficult to find any manufacturers who will promise even 60 days' delivery on Steel Bars. Manufacturers quote 1.65c. to 1.75c. for the earliest shipments they will be able to make. The demand for Hoops is heavy and quite large contracts have been placed by local buyers. Jobbers have had a continued heavy trade during the week, and any falling off in the number of orders has been more than made up by an increase in the quantity purchased. Manufacturing consumers are still drawing heavily on these stocks. Small lots of Bar Iron are held at 2c.; Steel Bars at 1.90c. to 2c., and Light Hoops at 3c., base.

Structural Material.—Conditions have seldom been more satisfactory than at present. The demand continues, although mills are so crowded with work that they are steadily falling further in arrears. Specifications against contracts are very heavy. The demand for quick delivery is throwing much trade on the local yards. These have perhaps never had as large a business as they are enjoying. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.75c.; 18 inches and over, 1.85c.; Angles, 1.75c. rates; Tees, 1.80c.; Universal Plates, 1.75c. to 1.85c.; small lots of Beams and Channels from local yards are quoted at 2.25c.; Angles, 2c. rates; Tees, 2.15c.

Plates.—The tonnage now being placed is stated not to comprise any large individual contracts, but consumers quite generally are covering their wants for the next three or four months. The demand from local warehouses is excellent, but not so large as a short time back, when the mills were unable to make satisfactory deliveries. Mill shipments are quoted as follows: Tank Plate, ¼-inch and heavier, 1.75c. to 1.80c., Chicago; Flange, 1.85c.; Marine, 1.95c. Jobbers are selling small lots from store at 1.90c. to 2c. for Tank and 2.25c. for Flange, with the usual extras for heads, segments, lighter gauges, &c.

Sheets.—Manufacturers of winter necessities, such as Stove Pipe, Elbows, &c., are seeking supplies in every direction, and are taking any sizes of Black Sheets they can procure, regardless of waste in cutting. Other consumers of Sheets are also taking what they can find, as stocks are very badly broken. Although the strike is over, it will be two or three weeks before the mills get into good running order and regular shipments can be decided upon. The supply of Galvanized Sheets is somewhat better than that of Black Sheets, but buyers are also being subjected to much inconvenience and cannot always secure the quantities they need. No. 27 Black Sheets are held at 4c. to 4.25c., and Galvanized Sheets at 60 and 5 to 65 for small lots from store.

Merchant Pipe.—Buyers are not so urgent in their demand and the volume of business has therefore fallen off to some extent. The breaking of the strike in the Pipe mills causes all who can wait to postpone buying until the supply is better. The business thus deferred will, it is expected, cause a quite active demand a little later. Prices are still irregular, depending upon various conditions.

Boiler Tubes.—The heavy demand for shipments from local stocks continues. Consumers are buying small quantities, but their necessities compel them to make purchases notwithstanding the high prices prevailing. The large stocks known to be carried in Chicago are attracting business from a very wide area. Prices may be quoted as follows:

	Steel.	Iron.
2¾ to 5 inches	50	45
1¾ to 2½ inches	40	35
1 to 1½ inches	35	30
6 inches and larger	40	35

Rails and Track Supplies.—Railroad companies are manifesting their confidence in the future by freely placing Rail orders for next year's delivery. It would not be surprising if prices should be advanced. Heavy Sections are quoted at $28, while Light Sections range from $30 for 45-lb. Rails upward, according to weight. Although the season is now quiet the strong demand continues for all kinds of Fastenings, Spikes being particularly active and somewhat difficult to obtain. Quotations are as follows: Splice Bars, 1.65c. to 1.75c.; Spikes, 2.10c.; Track Bolts, with Hexagon Nuts, 2.90c. to 2.95c.; Square Nuts, 2.75c. to 2.80c.

Merchant Steel.—The mills are well supplied with orders and a steady demand is experienced for small lots, which keeps the trade fairly active. Tool Steel is in quite good demand, but business in this line is not so large as during the summer months. Mill shipments, Chicago, are quoted as follows: Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.85c. to 2c.; Open Hearth Spring Steel, 2.30c. to 2.40c.; Toe Calk, 2.40c. to 2.60c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 55 to 60 off. Ordinary grades of Crucible Tool Steel are quoted at 6¾c. for carloads and 7c. to 7½c. from store; Specials, 12c. upward.

Old Material.—Dealers continue to hold up the price of Wrought Scrap, and such purchases as are now being made by consumers are regulated by the values thus established. The demand for Busheling Scrap and Turnings continues to be a feature of the market. A better movement is reported in Cast Scrap as a result of the large business among the foundrymen. The following are approximate quotations per gross ton:

Old Iron Rails	$21.00 to $21.50
Old Steel Rails, mixed lengths	13.50 to 14.00
Old Steel Rails, long lengths	15.50 to 16.00
Heavy Relaying Rails	25.50 to 26.00
Old Car Wheels	16.00 to 16.50
Heavy Melting Steel Scrap	12.50 to 13.00
Mixed Steel	10.50 to 11.00

The following quotations are per net ton:

Iron Fish Plates	$16.50 to $17.00
Iron Car Axles	20.50 to 21.00
Steel Car Axles	15.50 to 16.00
No. 1 Railroad Wrought	16.00 to 17.00
No. 2 Railroad Wrought	14.50 to 15.00
Shafting	16.50 to 17.00
No. 1 Dealers' Forge	13.00 to 13.50
No. 1 Busheling and Wrought Pipe	12.25 to 12.75
Iron Axle Turnings	11.25 to 11.75
Soft Steel Axle Turnings	9.75 to 10.25
Machine Shop Turnings	10.25 to 10.75
Cast Borings	5.00 to 5.25
Mixed Borings, &c	5.25 to 5.50
No. 1 Boilers, cut	11.50 to 12.00
No. 2 Boilers, cut	9.50 to 10.00
Heavy Cast Scrap	11.25 to 11.75
Stove Plate and Light Cast Scrap	8.50 to 9.00
Railroad Malleable	12.00 to 12.50
Agricultural Malleable	11.00 to 11.50

Metals.—The situation is absolutely without change. Carload lots of Lake Copper are maintained at 17c. and Casting brands at 16½c. Pig Lead is unchanged at 4.32½c. for Desilverized and 4.42½c. for Corroding in 50-ton lots. Dealers continue to quote selling prices on small lots of Old Metals as follows: Copper Wire and Heavy, 15c. to 15¼c.; Copper Bottoms, 14c.; Pipe Lead, 4.15c.; Zinc, 2.75c.

Coke.—The great scarcity of cars in the Coke regions is causing much trouble. Consumers are paying $5.25 to $5.50 for 72-hour Foundry Coke if they can find any for immediate delivery. Foundrymen east of Chicago are endeavoring to buy Coke in this market.

Philadelphia.

FORREST BUILDING, September 17, 1901.

The Iron and Steel markets have stood up remarkably well, considering the shock which the country has passed through since date of our last report. Naturally there has been to some extent a postponement of active operations, but the market has retained its strength, which is expected to become still more evident before the close of the month. Inquiries for quotations and negotiations which are now in progress indicate a very heavy business in the near future, particularly in Pig Iron, which is already so closely sold up that many of the furnaces have withdrawn quotations pending further developments. It is curious that with uniformly pessimistic reports from the Pittsburgh districts a considerable amount of Eastern Pig has been purchased for shipment in that direction. With a settlement of the Steel strike business ought to resume its normal conditions, so that in the near future prices in the various markets will no doubt be subject to a general leveling up. At present the greatest strength appears to be in Pig Iron, Billets, &c., the resumption of work at so many of the mills causing a slight hesitation in regard to Bars and Plates. Nobody expects much of a decline, but the fears of scarcity are eliminated, so that buyers are disposed to be more conservative than they have been at any time since the strike began. The general outlook is very favorable, however, and a heavy business is looked for during the remainder of the year.

Pig Iron.—The demand for Pig Iron is very active, consumers from all points having been good buyers during the past week or two. The local trade, as well as that in New England, appear to want a great deal of Iron, and so many orders have been entered that makers are beginning to feel very indifferent about taking more, unless at extreme prices. Some furnaces are not quoting at all, as they have about as much business as they can handle for this year, besides a fair amount for the first quarter of next year. Consumption is undoubtedly very heavy, but the unusual activity is in a measure due to the absolute exhaustion of stocks and the consequent necessity for replenishing as quickly as possible. Hand to mouth buying has been so general until very recently that a change of attitude in this respect is expressed by the axiom "that it is always either a feast or a famine." Nevertheless, prices are not likely to get very far from to-day's quotations, but continued activity, and possibly better prices, may certainly be regarded as among the possibilities, if not of the probabilities, of the near future. Nobody talks of lower figures this week, but there are some intimations that in certain recent large transactions prices were somewhat overstated. Prices for city and nearby deliveries are about as follows, and from 25c. to 50c. less at points within a radius of 100 miles South or West: No. 1 X Foundry, $15.50 to $16; No. 2 X Foundry, $14.85 to $15.25; No. 2 Plain, $14.35 to $14.75; Standard Gray Forge, $13.75 to $14; Ordinary Gray Forge, $13.25 to $13.50; Basic (Chilled), $14 to $14.25; Bessemer, nominal, at about $14.50.

Billets.—The scarcity of Steel for September and October shipments shows no abatement, and $27.00 to $27.75 is about as well as could be done. Winter deliveries could be had at less money, but the point has not yet been reached at which large transactions can be arranged. Both sides are waiting more light on the situation.

Plates.—Business continues to be very satisfactory and mills make no headway in working down their orders. The incomings fully offset the outgoings, so that several weeks' employment is on the books all the time. Orders are not confined to any particular branch, but all classes of consumers are taking their full proportion. There is no doubt that general business must be very active when so many different interests are calling for quick deliveries. Prices are steady as last quoted—viz., for city and nearby deliveries: Plates, ¼-inch and thicker, 1.75c. to 1.80c.; Universals, 1.75c. to 1.80c.; Flange, 1.90c. to 2.10c.

Structural Material.—There is a good demand and complaints are still made of the difficulties in securing reasonably prompt deliveries. This is especially the case with small sizes, but in all descriptions there is more or less of a shortage. Prospects continue to be very favorable in this line, plenty of business, with steady prices as follows for seaboard or nearby deliveries: Angles, 1.75c. to 1.85c.; Beams and Channels, 15-inch and upward, 1.75c. to 1.85c.

Bars.—Business in this line is very satisfactory, the demand being well up to the fullest capacity of the mills. Steel Bars are very scarce and command anywhere from 1.62½c. to 1.70c., and Best Refined Iron, 1.60c. to 1.65c., for deliveries in Philadelphia or nearby points.

Sheets.—Conditions in this department are such that they cannot be modified for a long time to come, as the shortage is very great. Prices are hardly quotable, but nominally are about as follows for best Sheets (Common Sheets two-tenths less): No. 10, 2.60c.; No. 14, 2.80c.; No. 16, 2.90c. to 3c.; Nos. 18-20, 3.50c.; Nos. 21-24, 3.60c.; Nos. 26, 27, 3.75c. to 3.80c.; No. 28, 4c. to 4.25c.

Old Material.—There is a better demand for almost everything, but Steel is particularly strong; others about the same as last week. Bids and offers for deliveries in buyers' yards would be about as follows: Choice Railroad Scrap, $17.75 to $18.50; Country Scrap, $15.50 to $16; No. 2 Light (Ordinary), $12 to $12.50; No. 2 Light (Forge), $13.75 to $14.25; Machinery Cast, $13.75 to $14.25; Heavy Steel, $16.50 to $16.75; Old Steel Rails, $16.75 to $17; Old Iron Rails, $18.50 to $19.50; Wrought Turnings, $11.50 to $12; Cast Borings, $7.25 to $7.50; Old Car Wheels, $16.50 to $17; Iron Axles, $22 to $23; Steel Axles, $17 to $18.

Cincinnati.

FIFTH AND MAIN STS., Sept. 18, 1901.—(*By Telegraph.*)

The market for Pig Iron is in a very fair condition just now. If another 50c. could be added to the price-list it would be called good. The wisdom of those who have been holding for the maximum quotations is now apparent. The situation is a strong one, and trading shows a healthy normal state of affairs. While there may possibly be a little Southern Iron yet to be had on the basis of the minimum figures it is generally recognized that there is but one price at which Iron can be had, and that is on the $10.50 Birmingham basis. The buying is chiefly confined to lots of less than 1000 tons, and mainly for this year's delivery. The largest trans-

action reported is for about 10,000 tons of Pipe Foundry stock. Freight from Birmingham is $2.75 to this point; from Hanging Rock district, $1.10. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$13.50 to $13.75
Southern Coke, No. 2	13.00 to 13.25
Southern Coke, No. 3	12.50 to 12.75
Southern Coke, No. 4	12.00 to 12.25
Southern Coke, No. 1 Soft	13.50 to 13.75
Southern Coke, No. 2 Soft	13.00 to 13.25
Southern Coke, Gray Forge	12.00 to 12.25
Southern Coke, Mottled	12.00 to 12.25
Ohio Silvery, No. 1	14.60 to 15.00
Ohio Silvery, No. 2	14.10 to 14 60
Lake Superior Coke, No. 1	14.50 to 15.00
Lake Superior Coke, No. 2	14.00 to 14.50
Lake Superior Coke, No. 3	13.50 to 14.00
Southern Basic	13.75 to 14.00
Car Wheel and Malleable Irons.	
Standard Southern Car Wheel, chilling grades	$18.25 to $18.75
Standard Southern Car Wheel, No. 2	17.25 to 17.75
Lake Superior Car Wheel and Malleable	18.50 to 19.00

Plates and Bars.—The market is steady and unchanged. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.60c., with half extras; same in small lots, 1.80c., with full extras; Steel Bars, in carload lots, 1.55c., with half extras; Base Angles, in carload lots, 1.80c.; Plates, ¼ inch and heavier, 1.90c. to 2c.; 3-16 inch, 2.10c.; Sheets, No. 16, 2.90c. to 3c.

Old Material.—No change to note in conditions. Market is rather quiet. We quote dealers' buying prices, f.o.b. Cincinnati, as follows: No. 1 Wrought Railroad Scrap, per net ton, $13.50 to $14; Cast Railroad and Machine Scrap, $12.25 to $12.75; Iron Axles, $19 to $20; Iron Rails, $17.25 to $18.25; Steel Rails, rolling mill lengths, $14.75 to $15.25; short lengths, $13.75 to $14; Car Wheels, $16.75 to $17. All prices except No. 1 Wrought on the basis of gross tons.

Cleveland.

CLEVELAND, OHIO, September 17, 1901.

Iron Ore.—One of the rumors which caused some comment was that the vesselmen are not at all satisfied with the rates and will insist upon an advance later in the year. The United States Steel Corporation have, in the endeavor to maintain a steady market during the summer, taken all of the tonnage presented at rates which would hardly be warranted were the law of supply and demand to rule in the chartering of tonnage. The result has been that while rates have been well maintained the dispatch has been so poor that the vesselmen have been able to make but a moderate per cent. of the rates offered on the basis of good dispatch at those rates. To recoup themselves, therefore, the vessel interests are inclined to insist that better rates be paid on the movement during the late fall. This demand naturally presupposes the shipment of enough material late in the year to warrant the chartering of wild tonnage. The rates at present remain steady at the quotations which have prevailed all during the summer: Eighty cents from Duluth, 70c. from Marquette and 60c. from Escanaba. The demand for tonnage is good in all quarters.

Pig Iron.—There is a better tone all the way through this week to the Pig Iron market, and there are abundant indications now of good business ahead. The sales of foundry grades have been heavy and the demand is still good. The furnaces are now without any Iron on their stock piles and all sales that are made are dependent entirely upon the production. Deliveries in consequence are very uncertain and no promises of promptitude in shipment are made. The prices hold as they have been during the last few months at $14 to $14.25 for No. 1, Valley furnace, and $13.50 to $13.75 in the Valley. Reports have come in this week of some sales of Basic Iron made during the last week. The reports are that quite a volume of business has been done. The reported price obtained is $15, although this is hardly the established price of the market. Some inquiries were made during the week for material, and when $15 was named the orders were withheld. Bessemer producers are expecting some encouraging developments as a result of the close of the strike of the Amalgamated Association. A few inquiries came in the first part of this week, but the market is hardly alive yet to the fact that the strike is over and until that time has come there will be but little buying. Nominal quotations are $15.25.

Finished Material.—The Billet market is still quite strong. The premiums vary according to the need of the purchaser and the supply of the dealer. The demand for Structural Material still keeps up, and the specifications on former orders are alone heavy enough to keep the mills constantly employed. Deliveries are not promised in less time than two months and sometimes 90 days are asked in which to make deliveries. The price holds at 1.70c. Plates are in moderate demand, although the ship orders have about all been placed. The price holds at 1.70c. The news of the end of the strike of the Amalgamated Association is not expected to make much difference in the Sheet market for some time to come. Orders anticipating the end of this strike have been placed before now which will keep the mills busy for some time to come. The excessive prices which have been charged will likely moderate some soon, as the quotations have been in a measure speculative, the material being sold mostly out of stock. The market has heard of a possible reduction in the price of Sheets and Tin Plate. Bar Iron will hardly be affected, as the idle Bar producing capacity has not been a strong factor in the market at any time, consequently the resumption will not add largely to the supply. Steel Bars are still sold at 1.50c, and Iron Bars at 1.52½c.

Old Iron.—The scrap trade this week has been promising. Some good sized sales have been reported during the week and the market shows good business ahead. The reports are that the mills which are just now resuming operations have but little, if any, stock on hands and replenishing sales in large amounts are expected. The prices have not changed in the least, quotations being as follows: No. 1 Wrought, $15 net; Heavy Steel, $15 gross; Steel Rails, $15 gross; Cast Borings, $6 net; Wrought Turnings, $10 net.

Birmingham.

BIRMINGHAM, ALA., September 16, 1901.

The tone of the Iron market the past week was decidedly better than it has been for some time past, and sales were larger. It was a difficult matter to fill orders for some grades, and they seemed to be the ones most in demand. The consequence was prices were firmly maintained. But there was no advance in values. Foundry grades were scarce, and in very good demand. We have now in this district six furnaces out of blast for various reasons, and this cuts a material figure in production. It is conservative to say that current sales are fully covering current output. There is a disposition in some quarters to put the market up and an advance of 25c. to 50c. is heralded for this week. But there is another element in the trade which thinks that present prices will prevail. Some sales of No. 2 Foundry were made at $10.50, and some were made at $10.75. The demand was mainly for nearby delivery, though there was some business booked for the last quarter of the year. Basic Iron was quiet. It would have been difficult to obtain had there been a demand for it. No. 3 Foundry was sold at $10 to $10.25. Gray Forge went at $9.25 to $9.50, the bulk of the sales being at the higher values.

In Steel the production has been increased since last report and efficiency in the furnace practice has been improved. There is gossip that plans are about completed for doubling the capacity of the Steel plant, but officials will not confirm it. That considerable additions will be made to the productive capacity of the Tennessee Company it seems safe to assert. In just what lines this will be done is so far a secret the officials are keeping to themselves.

The business of the Birmingham Machine & Foundry Company has so increased of late that they have established an office in New York City to care principally for their export business.

Mining operations are being prosecuted with vigor, and the demand for Coal has stood up wonderfully well. Improvements are being made all over the district, and the Tennessee Company will be a leader in their extent and cost. All our industries seem to be flourishing and to have all they can comfortably care for.

Pittsburgh.

HAMILTON BUILDING, September 18, 1901.—(*By Telegraph.*)

Pig Iron.—The Bessemer Iron market seems to be slightly firmer in tone. In the latter part of August and early in September, when some of the large Steel plants were closed, there was a surplus of Bessemer Iron and it was offered for quick shipment in some cases as low as $14.75 a ton, at furnace. These were only stray lots, however, and have all been cleaned up. To-day the market seems to be all of $15 to $15.10 for small lots at the outside furnaces, while the Bessemer Furnace Association is holding Iron nominally at $15.25, at furnace. Two large Steel plants are reported to have bought a round lot of Bessemer Iron at a price equal to about $15, at furnace. Gray Forge is quiet and is held at about $12.75, at furnace, or $13.50, Pittsburgh. Foundry Iron is in better demand, but prices are no higher. We quote Bessemer Iron at $15 to $15.10 in small lots and $15.25 in round lots, at the furnace, equal to $15.75 to $16, Pittsburgh. Forge Iron is $13.50 and No. 2 Foundry $14 to $14.25, Pittsburgh.

Billets.—Demand for Steel is for small lots only, and for prompt shipment we quote Billets for September and October shipment at $24.50 to $25, maker's mill. It is claimed that above $25 has been paid for several small lots of Billets where the sellers contracted to ship out within a specified time.

(*By Mail.*)

It is not believed that the death of President McKinley will seriously interfere with business. The statement of President Roosevelt that he will carry out the policy of the lamented President has already done much to restore confidence. All the industrial works, including Carnegie Steel Company, Jones & Laughlins, American Steel & Wire and other plants will be closed down on Thursday, the day of the funeral. Business of all kinds will be suspended as far as possible. The settlement of the strike on terms dictated entirely by the Steel Hoop, Tin Plate and Sheet companies gives general satisfaction. The idle mills are rapidly getting in shape for starting and most of them will be in operation within a week. The terms of settlement are referred to fully elsewhere in this issue. There is nothing of special interest to note in the Iron trade aside from the above. There is a good volume of business, and the fact that the mills are so far behind in deliveries would seem to indicate that present prices will be maintained for the balance of the year at least, except for such products as Tubes and Sheets, values of which are abnormally high.

Rails.—Report has it that the tonnage of Rails placed for next year is much larger than generally supposed, and is said to aggregate close to 250,000 tons. We quote at $28, at mill.

Ferromanganese.—We quote foreign Ferro at $52.50, f.o.b. Pittsburgh, in carloads and larger lots. Small lots of domestic bring $55 to $60 per ton.

Plates.—Official prices of Plates have been reaffirmed and will likely remain unchanged for some time. There is only a fair volume of business, tonnage having fallen off a good deal lately. A great many Plates are being used in the building of tank cars for the Texas oil fields. We quote: Tank Plate, ¼ inch thick up to 100 inches in width, 1.60c. at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.80c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price to 3c. Plate more than 100 inches wide, 5c. extra 100 lbs. Plates 3-16 inch in thickness, $1 extra; gauges Nos. 7 and 8, $3 extra; No. 9, $5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots. Terms, net cash in 30 days.

Structural Material.—No large jobs have been given out lately, but a good many small orders are being placed which amount to a good deal of tonnage. The structural mills are all filled up for the balance of this year. There is no change in prices. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inches, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.40c. to 1.45c., half extras, at mill; Universal and Sheared Plates, 1.60c. All above prices are f.o.b. Pittsburgh.

Bars.—Settlement of the strike will result in some of the idle mills of the American Steel Hoop Company getting started this week, and the supply of Steel Bars will be materially increased. There is a good demand and the market is very strong. Prompt Steel Bars are held at 1.50c., at mill. Contracts for extended delivery can still be placed on the basis of 1.40c., at mill, for Bessemer, with the usual advances for Open Hearth stock and high carbons. We quote Common Iron Bars at 1.50c., Valley, for prompt shipment. It is probable that on desirable contracts for extended delivery Iron Bars could be bought at 1.45c., Valley.

Sheets.—Now that the strike is over, the supply of Sheets will soon be materially increased and buyers will get more prompt deliveries. The leading Sheet interest are behind in deliveries, and it will be several months befor they have caught up with back orders. The outside mills are also well filled up for balance of this year, and present high prices of Sheets for the next two or three months seem assured. Some of the outside mills have sold a good deal of tonnage of Sheets for delivery next year, but without a fixed price, the official prices of the leading Sheet interest to govern these contracts. The leading Sheet interest quotes prices of Sheets for future delivery as follows: On lots in 500 bundles or more of Black Sheets, one pass through cold rolls: Nos. 10, 11, and 12, 2.30c.; Nos. 14 and 15, 2.40c.; Nos. 16 and 17, 2.50c.; Nos. 18, 19, 20 and 21, 2.60c.; Nos. 22, 23 and 24, 2.70c.; Nos. 25 and 26, 2.80c.; No. 27, 2.90c.; No. 29, 3c.; No. 29, 3.15c.; No. 30, 3.25c. On lots less than 500 bundles the American Sheet Steel Company will not make shipments except through jobbers, and for direct shipments from mill in less than carload lots an extra charge of 10c. per 100 lbs. is made. Galvanized Sheets are held at 70, 10 and 5 off in lots of 500 bundles and over, and at 70 and 10 in smaller lots. Galvanized Sheets for spot shipment are held at 65 and 5 off. Prices for Sheets for shipment within 60 to 90 days are higher and outside mills are quoting for November and December on the basis of about 3.25c. for No. 27 and 3.35c. for No. 28; on Galvanized, 70 and 5 is quoted. Sheets for prompt shipment bring still higher prices, No. 27 is selling at about 3.65c. to 3.75c., and No. 28 from 3.75c. up to 4c. These prices are for spot shipment. Galvanized Sheets for this and next month are selling for small lots at 60 off, and in carloads at 65 off.

Tubular Goods,—The strike has been settled and the idle mills of the National Tube Company, consisting of Riverside, Pennsylvania, Continental and National works at McKeesport, will be started up in a few days. Jobbers are still able to get very high prices on small lots of Pipe for prompt shipment and quote about as follows: ⅛ to 1 inch, 40 per cent. off; Galvanized, 20 per cent. off; 1¼-inch, Black, 50 per cent. off; Galvanized, 30 per cent. off; 1½ to 10 inch, Black, 55 per cent. off; Galvanized, 40 per cent. The prices quoted by the National Tube Company in carload lots to consumers for forward delivery are as follows:

Merchant Pipe.

	Per cent. Black.	Per cent. Galvd.
⅛ to ½ inch and 11 to 12 inch	61	48
¾ to 10 inch	68½	56

Casing, Random Lengths.

	S. & S.	I. J.
2 to 3 inch	58	53½
3¼ to 4 inch	63	59
4¼ to 12½ inch	65	61½

Casing, Cut Lengths.

	S. & S.	I. J.
2 to 3 inch	53½	59
3¼ to 4 inch	59	55
4¼ to 12½ inch	61½	57½

Boiler Tubes. Up to 22 feet.

Steel.	Per cent.
1 inch to 1¾ inch and 2¾ inch to 5 inch, inclusive	65½
2 inch to 2½ inch, inclusive	60
6 inch and larger	59
Iron.	
1 inch to 1¼ inch and 2½ inch	43½
1¾ inch to 2¼ inch	43
2¾ inch to 13 inch	53

Skelp.—The market is active and prompt Skelp is hard to obtain. We quote Grooved Iron at 2c., and Sheared at 2.05c.

Scrap.—Now that the Steel strike is over, dealers in

Iron and Steel Scrap believe the market will considerably improve and they expect higher prices. It is claimed there is very little Scrap in stock, and with so many idle mills starting, some kinds of Scrap will be very scarce and are bound to be higher. There is a high range in prices being quoted by the different dealers, some asking much higher prices than others. We quote: No. 1 Wrought Scrap, $15.50 to $16, net ton; Busheling, $13 to $13.50; Old Iron Rails, $20 to $21 a gross ton, Valley mill Cast Iron Bearings, $7; Heavy Mailing Stock, $15 to $15.50; Turnings, $11; Old Horseshoes, $13.50 to $14; Low Phosphorus Melting Stock, running below 0.035 in phosphorus, $18 to $18.50; Old Car Wheels, $16.50 to $17. All above are gross tons except where net is given.

Connellsville Coke.—Of the 21,747 ovens in the Connellsville region, 19,341 are active and 2406 idle. Output last week was 223,555 tons, a gain over previous week of more than 16,000 tons. Most of the works in the region ran six days last week, the Frick Coke Company running all their works full time. Shipments were 10,193 cars. We continue to quote strictly Connellsvile Furnace Coke at $1.75 to $2, and 72-hour Foundry at $2.25 to $2.50 a ton; Main Line Furnace Coke is being offered on contract at $1.50 to $1.60 and Foundry at $1.75 to $2 a ton. Some brands of Main Line Coke for prompt shipment have been sold below $1.50 a ton.

St. Louis.

CHEMICAL BUILDING, September 18, 1901.—(*By Telegraph.*)

Pig Iron.—In the Pig Iron market a very satisfactory condition seems to exist, and the outlook for a heavy business later on is very promising, and on all sides are reported numerous inquiries and an exceeding good demand for this time of the year. The furnaces are well booked for several months ahead, and there is no inclination to shade present prices. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry	$14.25 to $14.50
Southern, No. 2 Foundry	13.50 to 13.75
Southern, No. 3 Foundry	13.00 to 13.25
Southern, No. 4 Foundry	12.50 to 12.75
No. 1 Soft	14.00 to 14.25
No. 2 Soft	13.50 to 13.75
Gray Forge	12.50 to 12.75

Bars.—No let up in the demand for Bars is reported, and with the settlement of the strike a very general broadening of the market is expected. Plenty of new orders can be had, and with the resumption of the mills to their full capacity deliveries can be more promptly met. Prices remain the same, and we quote Iron Bars, 1.65c. to 1.75c.; Steel Bars, 1.70c. to 1.80c. Jobbers quote Iron Bars, 1.95c. to 2c.; Steel, 2.05c. to 2.15c., full extras.

Rails and Track Supplies.—The same strong and steady demand in Light and Heavy Rails continues, and with the culmination of the strike the mills can soon meet the requirements of delivery. A heavy tonnage is now reported from the large railroads, and the orders to come from this quarter are expected to be on a liberal scale. Track Supplies are in very good demand and prices remain firm. We quote: Splice Bars, 1.75c. to 1.95c.; Bolts, with Square Nuts, 2.75c. to 2.90c.; with Hexagon Nuts, 2.90c. to 2.95c.; Spikes, 2c. to 2.05c.

Pig Lead.—A fair demand continues in the Pig Lead market, with no changes in prices since our last report. Soft Missouri is quoted at 4.25c. to 4.25½c., and Chemical at 4.30c. and 4.35c.

Spelter.—The improved condition in the Spelter market continues, and prices are a shade better; as high as $3.90 is quoted.

New York.

NEW YORK, September 18, 1901.

Pig Iron.—While earlier in the month there was some buying on the part of some of the pipe interests, no transactions of moment have been closed during the past week, which has been rather quiet. Inquiries are being received for export, but prices abroad are so low that even with the low freights offering American shippers would net considerably less than the home market. Thus far only about 800 tons have been placed for shipment to Italy, and the business was done at a sacrifice. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16 to $17.50; No. 2 X, $14.75 to $15.75; No. 2 Plain, $14 to $14.50; Gray Forge, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $14.50 to $15; No. 2 Foundry, $14.25 to $14.50; No. 1 Soft, $14.50 to $15; No. 2 Soft, $14.25 to $14.50; No. 3 Foundry, $13.25 to $13.50; No. 4 Foundry, $12.75 to $13.25; Gray Forge, $12.75 to $13.

Steel Rails.—Although there are some good inquiries in the market for next year, we are quite unable to trace the large volume of business which it is claimed by Western dispatches has been done lately. We quote $28 for Standard Sections, $33 to $33.50 for Girder Rails, and $22 to $23 for Relayers. We quote Spikes, 1.80c. to 1.85c.; Splice Bars, 1.50c. to 1.60c.; Hexagon Track Bolts, 2.65c. to 2.70c., at mill.

Finished Iron and Steel.—The Structural mills are exceedingly well employed, and for this season of the year there has never been so much business in sight. Aside from a lot of about 4000 tons for a large new plant at Buffalo, taken by a tidewater works, nothing of any importance has been closed during the last week. Locally the complete stoppage of the demand for Beams for apartment houses is noticed. This is the result of the law which went into effect on August 1 and which calls for a larger area of air shafts, &c. Builders claim that under the restrictions imposed it does not pay to put up apartment houses. In the Plate market an easing tendency is noticed in Universals. We quote as follows at tidewater: Beams, Channels and Zees, 1.75c. to 1.80c.; Angles, 1.75c. to 1.80c.; Tees, 1.80c. to 1.85c.; Bulb Angles and Deck Beams, 2c.; Sheared Steel Plates are 1.80c. to 1.85c. for Tank, 1.90c. to 1.95c. for Flange, 2c. to 2.05c. for Fire Box. Charcoal Iron Plates are held at 2.25c. for C. H. No. 1, 2.75c. for Flange, and 3.25c. for Fire Box. Refined Bars are 1.58c. to 1.60c.; Soft Steel Bars, 1.62½c. to 1.65c.

Metal Market.

NEW YORK, September 18, 1901.

Pig Tin.—Considerable business was transacted during the week under review, but it was principally for future delivery, shipments to be made up to the end of the year. The market fluctuated somewhat and declined to-day on the strength of the sharp break in London. The closing prices named here to-day are as follows: Spot and September, 25.20c. to 25.30c.; October, 25.15c. to 25.35c.; November, 25c. to 25.15c.; December, 24.75c. to 25c. The London market to-day closed £114 2s. 6d. for spot and £112 10s. for futures. The Dutch Government announced to-day that they would sell the same quantity of Banca next year as was sold this year, which was about 2500 tons every two months. The shipments from the Straits for the first half of this month amounted to 2070 tons, as against 2290 tons for the same period of last year. It is expected, however, that the total for this month will be considerably above the total of the month of September of last year, as during the latter half of September, 1900, shipments were very light, the aggregate for the month being but 3650 tons.

Copper.—The market is dull and nominal. Very little business is being negotiated. The controversy regarding the large unsold stock of the principal producers has without doubt had a bad effect on business, and while it was generally believed that these stocks were very large, it was not generally thought that they aggregated the alleged 135,000,000 lbs. Lake is quoted at 16½c.; Electrolytic, 16¼c. to 16⅜c., and Casting, 15¾c. to 16⅜c. The London market to-day quoted £67 5s. for spot and £67 12s. 6d. for futures. Best Selected advanced 10 shillings, being quoted £74 10s. Exports thus far this month aggregate 3300 tons and the imports amount to 2800 tons.

Pig Lead.—There is no change, either in general conditions or prices, in this country. The American Smelting & Refining Company continue to quote 4.37½c. for

Desilverized, New York, and 4.32½c., St. Louis. The London market has declined to £12.

Spelter—Is firmer, owing to the settlement of the steel strike. The galvanizers have purchased more freely, and the general consuming interests have done likewise, fearing a marked advance, which was calculated to follow the re-entering of the galvanizing interests into the market. We are informed, however, that the American Sheet Steel Company were using considerably more Spelter than was generally thought, as the works which were not affected by the strike were operated beyond their normal capacity to compensate for the loss at the mills that were shut down. Spot and September were quoted at the close to-day at 4.05c. to 4.10c., October 4c. to 4.10c., and the St. Louis market at 3.90c. London is dull at £16 15s. There are renewed rumors regarding progress in the direction of an international consolidation of Zinc interests. We are informed that the negotiations which have been pending for some time in Europe, looking toward a restricted production, are nearing a successful termination. It is said that the Belgian producers have been standing in the way somewhat, but are expected to be brought into line very shortly. There have also been recent negotiations here in the direction of bringing the American miners and smelters together. Certain large interests which are of great importance and which have throughout all similar negotiations held back from any of the proposed schemes, are taking a similar stand and show no disposition to enter the present agreement. It is hoped by the promoters of the European combination that an agreement can be arrived at with the American producers restricting the amount of zinc ores exported from this country. On the whole, while the European negotiations may be progressing favorably, there is at present apparently no assurance of success as regards the American end of the transaction. A representative of certain American interests is now abroad and is mentioned in connection with the European proceedings, but it is believed in the trade that he is representing more particularly his own concern rather than any combined interests of this country.

Antimony—Is unchanged. Hallett's is quoted 8½c. and Cookson's 10¼c. Outside brands are sold for 8¼c.

Nickel—Is unchanged, prices continuing on a basis of 60c. for lots not covered by yearly contracts.

Quicksilver.—There is no change. The price quoted is $51 per flask of 76½ lbs. in lots of 50 flasks and more. London is unchanged at £9.

Tin Plate.—The only change to be noted is the probable resumption of operations at the mills within a very short time. Whatever mills are operating are running on orders taken some time ago. Of these the American Tin Plate Company have enough to fill the mills for practically the balance of this year. The company continue to quote for the balance of this year on a basis of $4.19 per box of Standard 100-lb. Cokes, f.o.b. New York, and $4 per box, f.o.b. mills. The London quotation has declined 4½ pence to 15 shillings 4½ pence.

John Stanton reports the Copper production in the United States and of the foreign reporting mines and United States exports as follows, in gross tons of 2240 lbs.:

	Reporting mines.	Oustide sources.	Total U.S. product.	Product foreign mines.	U. S. exports.
First half 1895....	70,612	9,100	79,712	42,484	34,215
Second half 1895...	84,885	6,600	91,485	43,674	30,507
Total 1895.....	155,497	15,700	171,197	86,178	64,722
First half 1896....	94,180	7,200	101,380	42,255	58,216
Second half 1896...	95,314	7,200	102,514	43,941	67,287
Total 1896.....	199,494	14,400	203,894	86,196	125,503
First half 1897....	103,651	5,000	108,651	44,263	64,870
Second half 1897...	100,555	6,900	107,455	44,007	64,340
Total 1897.....	204,206	11,900	216,106	88,270	129,210
First half 1898....	112,687	7,800	120,487	40,880	68,284
Second half 1898...	103,535	10,250	113,785	43,674	76,831
Total 1898.....	216,222	18,050	234,272	84,554	145,115
First half 1899....	111,987	12,500	124,487	43,629	56,460
Second half 1899...	118,818	18,900	137,719	45,611	63,351
Total 1899.....	230,806	31,400	262,206	89,240	119,811
First half 1900....	114,177	20,400	134,577	43,153	90,747
Second half 1900...	113,810	20,400	134,104	46,278	69,335
Total 1900.....	227,987	40,800	268,681	89,431	160,082
First half 1901....	112,794	20,600	133,394	46,847	50,027
July, 1901.....	18,585	3,400	21,985	9,254	6,824
August, 1901.....	19,267	3,400	22,667	8,180	6,840

The Corn Harvester.

BY R. L. ARDREY, CHICAGO, ILL.

A new industry that bids fair to become a large factor in the consumption of iron and steel is the manufacture of corn harvesters and corn husking and fodder shredding machines. It is estimated that about 35,000 corn harvesters have been sold this year, requiring more than 25,000 tons of iron and steel. Sales would have been much larger had the manufacturers been able to obtain materials, as it was discovered, when too late, that the demand was much greater than had been estimated. Between 8000 and 10,000 husking and shredding machines will be sold before the season closes; nearly as many as the annual output of threshing machines.

Within a few years the sales of corn harvesters will undoubtedly exceed 100,000 machines annually, as compared with an average output of about 150,000 grain binders. The acreage of corn is nearly twice the area seeded to wheat in the United States, while a corn binder will cover little more than half as much ground in a day as a grain binder. The corn binder is even more necessary to the economical and progressive farmer than the grain binder. If the labor could be had at ordinary farm wages, wheat could be cut by hand with cradles and bound by hand from the swath at about the same cost as when harvested with a twine binder, including the labor of shocking in both cases. It is the scarcity of labor that makes the twine binder a necessity to the farmer; and the same scarcity of labor is being felt throughout the West in the corn husking season, and will prove very serious should the present demand for labor in manufacturing industries continue for a few years.

From another point of view the corn binder is a more valuable and profitable machine to the farmer than the grain binder. Corn is popularly looked upon as a cereal crop, when, in fact, it is as much a grass as a cereal. The yield of fodder to the acre is as great in tonnage as an average crop of hay, and this fodder, when "shredded," is practically equal to hay in feeding value. The grain binder adds nothing to the value of the wheat crop, but the corn binder, by enabling the farmer to harvest his fodder crop, practically doubles his financial returns from his corn field. Heretofore the farmers of the West have been unable to save this enormously valuable fodder crop, because the labor has not been available to cut and shock it by hand. They have been unable to do more than to drive through the field with a wagon and husk the ears from the stalks, leaving the fodder to bleach and rot on the ground.

Fortunately for the farmer the manufacture of corn harvesters is in the hands of very strong companies. The McCormick Harvesting Machine Company and the Deering Harvester Company of Chicago make more than two-thirds of the entire output. The McCormick machine is of the vertical type. The machine straddles the row, gathering up and cutting the stalks, and binding them in the vertical position. The Deering is a horizontal binder, gathering the stalks with dividers which straddle the row in the same manner as the McCormick, but dropping them into a horizontal binding attachment. Both machines do good work, the question which is the better being as hotly disputed in the field as a question of politics on which men take sides. Both companies placed their machines on the market in 1895, and have improved them to a degree that makes their action as satisfactory in the field as the grain binders of 20 years ago. D. M. Osborne & Co. of Auburn, N. Y., have also built a machine of the vertical type, similar to the McCormick, for several years, and have an extensive trade. The Johnston Harvester Company of Batavia, Ill., within the past year or two have introduced a similar machine, which is reported very successful. Aultman, Miller & Co. of Akron, Ohio, the pioneer manufacturers of Buckeye harvesting machines, have introduced a horizontal binder similar in many respects to the Deering. It is understood that the Plano Mfg. Company of Chicago are experimenting with a horizontal machine, so

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING SEPTEMBER 18, 1901.

Cap'l Issued.		Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.	Closing quotations.	Sales.
$10,000,000	Am. Bicycle Co., Com.....	.....	3 - 3½	.....	.....	- 3⅞	.....	...	800
20,000,000	Am. Bicycle Co., Pref.....	.....	.....	.....	.....	.....	-15	15	100
10,000,000	Am. Bicycle Co., Bonds....	.....	.....	.....	.....	.....	.....	...	.....
29,000,000	Am. Car & Foundry, Com..	29⅜-29¾	28 -28½	.....	29 -29⅞	29¼-29¾	29¾-30	30	6,400
29,000,000	Am. Car & F'ndry, Pref.§..	-86	83 -85	.....	84⅜-85	-85½	84 -84½	84	3,100
7,500,000	Bethlehem Iron†.....	.....	.....	.....	.....	.....	.....	...	.....
15,000,000	Bethlehem Steel‡‡.....	.....	.....	.....	.....	.....	.....	...	.....
7,974,550	Cambria Iron, Phila.*.....	-48¼	.....	.....	.....	.....	.....	...	100
45,000,000	Cambria Steel*.....	25¾-26⅛	24¼-25	.....	25 -26	25⅝-25⅞	25½-25⅞	25⅞	33,150
17,000,000	Colorado Fuel & Iron.....	.....	92¾-95⅞	.....	97 -99½	98 -99¼	99½-102	99½	11,500
24,410,900	Crucible Steel, Com.....	.....	.....	.....	.....	.....	.....	...	.....
24,399,500	Crucible Steel, Pref.....	.....	.....	.....	.....	.....	.....	...	.....
1,975,000	Diamond State Steel‖§§...	.....	- 2⅞	.....	- 2⅞	.....	.....	...	400
15,000,000	International Pump, Com..	46 -46½	44½-45½	.....	44½-45	45½-45⅞	.....	...	2,200
8,850,000	International Pump, Pref..	.....	.....	.....	.....	-84	-85	85	600
11,000,000	International Silver.....	.....	.....	.....	.....	6 - 6½	- 6½	6½	600
10,750,000	Penna., new, Com., Phila..	.....	.....	.....	.....	.....	.....	...	.....
16,500,000	Penna., new, Pref., Phila.§.	.....	.....	.....	-87	-87	.....	...	100
12,500,000	Pressed Steel, Com.....	.....	39 -39⅞	.....	39½-41⅝	40½-41½	-41⅝	41⅝	2,600
12,500,000	Pressed Steel, Pref.....	-81⅞	.....	.....	.....	-81	-81	81	300
27,191,000	Repub. Iron & Steel, Com..	15 -17½	11¾-13¾	.....	13½-15	14 -14⅝	14½-15	15	33,900
20,306,900	Repub. Iron & Steel, Pref..	65¼-69½	60½-63½	.....	64⅞-67	66 -66½	66 -67½	67½	28,000
7,500,000	Sloss-Sheffield S. & I., Com.	.....	.....	.....	-30	.....	.....	...	100
6,700,000	Sloss-Sheffield S. & I., Pref.§.	.....	.....	.....	80 -80½	.....	.....	...	200
20,000,000	Tennessee Coal & Iron....	62½-64⅜	59 -61	.....	61¾-63½	63 -64½	63½-64¼	63½	18,600
1,500,000	Tidewater Steel‖.....	.....	.....	.....	.....	- 6½	- 6½	...	200
510,361,300	U. S. Steel Co., Com.‖....	43¾-44¾	40¼-41⅞	.....	43 -44⅝	43¾-44½	43½-44	44	234,600
508,511,200	U. S. Steel Co., Pref.‖....	93¾-94⅝	90 -91½	.....	93 -94¾	93¾-94½	93½-94¼	94¼	111,600
1,500,000	Warwick I. & S.‖.....	.....	.....	.....	- 7	- 7	- 7	...	550

Preferred stocks 7 % cumulative unless otherwise stated. § 7 % Non-Cu. §§ New stock. ‖ Par $10. ‡‡ Par $50, $1 paid in. ‖‖ Authorized Capital $550,000,000 Common; $555,000,000 Preferred; * Par $50. † 6 % guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph. ¶ Ex-dividend.

Bonded Indebtedness: American Bicycle Co., $10,000,000 sinking fund gold debentures 5 %; Cambria Iron Co., guaranteed 4 % per annum on $50 par by Cambria Steel Co.; Cambria Iron Co., $218 000 6 % debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Diamond State Steel Co, property leased from Diamond State Steel Co. at 4 % on $1,000,000, $7.50 on Steel stock paid in, total capital $2,000,000; International Pump: Blake & Knowles S. P. Co $1,000,000 6 %; Tennessee C., I. & R. R. Co., $8,367,000 6 %, $1,114,000 7 %, $1,000,000 7 % cu. pref.; Pennsylvania Steel, $1,000,000 5 % Steelton 1st, 1917, $2,000,000 5 % Sparrow's Point 1st, 1922, $4,000,000 consolidated, both plants; Bethlehem Iron, $1 351,000 5 % maturing 1907, interest and principal guaranteed by Bethlehem Steel Co.; Republic Iron & Steel, none; Warwick Iron & Steel, none; Colorado Fuel & Iron Co., Col. Fuel Co. Gen. Mort. 6 % $830 000, Col. Coal & Iron Con. Mort., 6 % $2,643,000, Col. Fuel & Iron Gen. Mort. 5 % $2,674,000, also outstanding $2,000,000 preferred stock; Sloss-Sheffield St. & I. Co., Sloss I. & S. first mortgage 6 %, $2,000,000, Sloss I. & S. general mortgage 4½ % $4,000,000. U. S Steel Corporation $304,000,000 5 % gold bonds, also Am. S. & W. Co. $130,656, Federal Steel Co. $9,822,000 Illinois 5 %, $7,417,000 E. J. & E. R R. 5 %, $1,600,000 Johnson 6 %, $6,732,000 D. & I. R. R. R. 5 % $1,000,000 2d D. & I. R. R. R. 6 %, $10,000 land grant D. & I. R. R. R. 5 %; National Steel $2,561,000 6 %.

that the majority of the large manufacturers of harvesting machines are now interested in this new industry.

The first attempt at the invention of a corn harvester was made more than 50 years ago by E. W. Quincy of Illinois. His machine was tested, unsuccessfully, in a corn field that is now covered by the city of Bloomington. Quincy spent all his life in futile efforts to perfect this machine, but lived to see the corn harvesters of the Deering and McCormick companies, then going through the experimental stages, on exhibition at the Columbian Exposition. It is estimated that these two companies spent nearly $1,000,000 on patents and experimental work before they were able to build successful machines.

Iron and Industrial Stocks.

Steel stocks moved in sympathy with the general market during the past week, declining sharply on the announcement of the death of the President, recovering on Monday, showing weakness on Tuesday and to-day advancing again. Reports are current that the American Can Company are making large earnings.

	Bid.	Asked.
E. W. Bliss, common	143½	...
E. W. Bliss, preferred	130	140
Cramp's Shipyard stock	79	82
Empire Iron & Steel, common	4	5
Empire Iron & Steel, preferred	30	35
National Enam. & St., common	25	28
National Enam. & St., preferred	84	85
New Haven	5	5½
Otis Elevator, common	32¼	32¾
Otis Elevator, preferred	96	98
Pratt & Whitney, preferred	85	90
U. S. Cast Iron Pipe Company, common	6	7
U. S. Cast Iron Pipe Company, preferred	33	35
U. S. Projectile	119	...
Va. C. I. & C., stock	7	8
Va. C. I. & C., bonds	44	46
H. R. Worthington, preferred	111	112
American Can Company, common	24⅞	25⅛
American Can Company, preferred	74¾	75

The stockholders of the Manufacturers' Light & Heat Company, at Pittsburgh, have decided to increase the capital from $1,500,000 to $5,000,000. The additional capital will be used to buy out existing gas companies and make extensions to old lines and buy new ones.

The Torrington Company.—From Boston come the following figures relative to the Torrington Company:

Receipts.

	1901.	1900.
Dividends Excelsior Needle Company	$100,000	$200,000
Rentals Excelsior Needle Company	107,500	100,000
Dividends, interest and miscellaneous receipts	77,627	12,770
Totals	$285,127	$312,771

Payments.

Dividends and interest	$280,000	$280,000
Salaries and directors' fees	7,920	10,299
Miscellaneous expenditures	3,099	2,079
Totals	$291,019	$292,379
Cash and cash assets, September	192,801	198,693

President Skinner says: "The business of the various companies which are owned by your company has been satisfactory during the past year. Almost every line of product has been increased. The English business, especially, is increasing, and promises before long to become a considerable factor as an income producer. The Standard Spoke & Nipple Company, of whose stock your company own a considerable majority, have done a fairly profitable business, but have charged off all their profits to capital account, deeming it wiser to do so for this their first year than to pay any dividends."

The George A. Fuller Company have declared a quarterly dividend of 1¾ per cent. on their preferred stock, payable October 1.

The International Steam Pump Company have declared a quarterly dividend of 1 per cent. on their common stock, payable October 1.

The Westinghouse Air Brake Company have declared the regular quarterly dividend of 2½ per cent. and an extra dividend of 3½ per cent., payable October 10.

Dividends.—The American Iron & Steel Mfg. Company have declared a dividend of 15 cents per share on their common stock, payable September 25, also a dividend of 1¼ per cent. on the preferred stock, payable October 1 to stock of record September 24.

The Westinghouse Air Brake Company of Pittsburgh have declared a regular quarterly dividend of 2½ per cent. and an extra dividend of 3½ per cent., payable October 10. The disbursement is the same as in the July quarter and calls for $660,000.

The Union Switch & Signal Company of Pittsburgh have declared the regular dividends of 2 per cent. on the preferred stock and 1 per cent. on the common, payable October 10.

The Westinghouse Machine Company of Pittsburgh have declared the regular quarterly dividend of ½ per cent. on the preferred and common stocks, payable October 10. The preferred stock of this company has advanced from 20 to 25 points in the last two weeks.

The American Smelting & Refining Company have declared a quarterly dividend of 1¾ per cent. on the preferred stock.

The Crucible Steel Company of America have declared the regular quarterly dividend of 1¾ per cent. on their preferred stock, payable September 30.

The Westinghouse Electric & Mfg. Company have declared the regular quarterly dividend of 1¾ per cent. on the first preferred stock, payable October 1.

The New York Machinery Market.

NEW YORK, September 18, 1901.

As should naturally be expected at this time, there was a general quieting down of business. It was, however, not the lull that precedes a depression of business, for the tone of the inquiries received and the replies to the solicitation of orders reflected clearly the continuance of confidence in the financial standing and national policy of the Government.

Earlier in the week under review a waiting policy on the part of purchasers made itself manifest. The last two or three days have furnished an assurance of confidence on the part of consumers. It is believed in the trade that based on present indications every hope of a continuance of the recent prosperous conditions is justified.

A few weeks ago there was talk of the advancing of prices in certain lines of machine tools built in the vicinity of Cincinnati. Now there comes a confirmation of these reports in the shape of word to the trade that these arrangements are progressing and that the advance may be expected in a short time. From all sections of the country reports are heard to the effect that shops are filled with work and on certain classes of machine tools deliveries are now being named several months distant. In respect to the machine tools there is nothing to deny the fact that the situation is sound and tends rather toward stiffening than otherwise.

Builders of machinery for power generating purposes have a number of good projects in view which throughout the summer have been held in abeyance. In some instances the verbal order has been given, but it has thus far been impossible to get the interested parties to sign the contracts. All signs point to a good fall business. Most shops in this line are at least comfortably filled with work. The large boiler builders are rushed with work and are still talking of a possibility of higher prices, due to the advances in plates and tubes, but competition in this line continues very sharp and consequently no changes have been made as yet. While it might be expected that the great order which the Babcock & Wilcox Company received last week from the New York Subway Company would fill their works for some time to come, this will not be the case at present, as the boilers will not be required for installation for more than a year. In connection with the tunnel work the electrical machinery is now the subject of interest and the question as to which of the great concerns will capture the order is commanding the attention of the trade. Owing to the tremendous amount of accessories that will be required, not only in the construction and equipment of the power station but also in the road itself, including the numerous stations, this work will continue to be the center of interest for many months to come.

A good sized proposition which has been quietly working itself within focus for some months is now said to be almost ripe. The interested parties, the West Virginia Pulp & Paper Company, have been extensive purchasers during the last two or three years. The work now contemplated, we understand, is the establishment of a 6000 horse-power plant at Piedmont, W. Va. None of the equipment for this plant has been purchased as yet. Plans and specifications are out, however, and estimates are being submitted. The New York offices of the concern are located at 309 Broadway. David Luke is in charge of the matter.

Interest is being revived in the project of the Clark Thread Company of Kearny, N. J., which looks toward the establishment of a large central power station for the operating of their mills. This matter came up some time ago, but was dropped temporarily. At present the great mills in Kearny and Newark are being operated through a number of steam plants. The idea is to erect one large central plant to generate enough electricity to drive all of the mills, and thus wipe out the several smaller power plants. It is rumored in the trade that the matter is again being resurrected.

Te expansion of the cement industry, which has been so marked during the last few years, continues, and consequently business in cement making machinery grows at a rapid pace. Several new projects in this line have just come up in the street. One that is attracting considerable attention is the erection of a large plant at Marksboro, N. J., by the Marksboro Cement Company. The buildings are being erected, and estimates are being received for the machinery equipment. C. J. Curtin of 80 William street is the engineer in charge who is to award the machinery contracts.

At Vulcanite, N. J., the Vulcanite Portland Cement Company, whose principal offices are located in the Real Estate Trust Building, Philadelphia, are making extensive improvements. A new mill to have a daily capacity of 2000 barrels per day is being erected. Contracts are being awarded by the Benneville Paste & Cement Company of Siegfried, Pa., for additional buildings and the necessary equipment to increase their production materially. Another report in the street states that the Lehigh Portland Cement Company of Allentown, Pa., contemplate the establishment of a Western plant. Mitchell, Ind., is named as the town selected. It will be recalled that this concern purchased heavily a few months ago for their Allentown plant.

It is announced that another large American concern intend building a plant in England. This latest venturer in the European manufacturing field are the J. G. Butt Company of Philadelphia. John A. Brill, vice-president of the company, is now in England for the purpose of selecting a site for the new works. It is expected that details will be known within about two weeks, when Mr. Brill will have practically made his arrangements regarding the location. The concern, who are builders of electric cars, expect to capture a part of the business which is now developing along extension of the electric railway system in Great Britain.

Considerable interest is being shown in the trade regarding the improvements which are being made at Jersey City by the Pennsylvania Railroad. Two 700-foot steel piers are to be erected there to supplant the old wooden ones which are now being torn away. In this connection a considerable quantity of machinery will be required, especially in the line of cranes and hoisting and conveying machinery. An extension to the road's Jersey City electric lighting plant will also be necessitated.

Inquiries have been received for machine tools for the equipment of two railroad shops. One is to be built at Glassport, Pa., by the Pittsburgh, McKeesport & Youghiogheny Railroad, and the other at St. Joseph, Mo., by the St. Joseph Stockyards Company.

The Pneumatic Wheel Company, who intend erecting a new plant at Freehold, N. J., are looking about for an equipment of machine tools and special machinery.

Catalogues Wanted.—Whyte & Smith, 218 Bond Building, Washington, D. C., have been very successful in exporting machinery, shafting, belting, &c., to the Philippines, and advise us that they would be glad to receive catalogues and prices from manufacturers who wish their goods introduced in that country. They have a representative in Manila looking after the trade.

The Old and the New in the Boiler Trade.*

BY EX-PRESIDENT H. J. HARTLEY OF PHILADELPHIA.

Would it be amiss to become reminiscent? If not, I place myself in the boiler shop of 40 years ago, and I behold a low shed, with a flooring of mother earth, this latter consecrated by the boys as a burial place for burnt rivets. And wasn't the shop smoky? The rafters were covered with a thick coating of soot, which resulted ofttimes in more than an argument on the part of the men, when it was found necessary to put up a block and tackle to lift rims up for connecting with others. Certainly, whoever did it could be called "smut faced" for the rest of that day. This block and tackle, by the way, was one of the first requisites of the shop; it was the crane of the day, lifting plates under punches, onto flange fires, and miles of cylindrical boilers high in air over stakes, where men on precariously constructed scaffolds drove cold ⅝-inch rivets with sledges. No doubt the reason that most of you are now listening to me with your eyes, instead of ears, is due to having stood at the end of these cylinders hung over stakes, the noise from them being greater in volume and velocity than that given by a modern 15-inch gun. The rest of the shop equipment scarcely gives me a paragraph, but picture to yourselves the one punch, the 4-foot rolls, the bellows and forge, and all the tools of that time have been mentioned, but don't overlook the block and fall; it helped materially to lift us into the present. And the men, good all around boiler makers every one, would cheerfully and with more zeal than was commendable, keep putting in braces, in a wagon top marine boiler, until they were hopelessly entangled, necessitating the undoing of some of their work to allow of their escaping. In those days every man had his own kit of tools, 'tis true, replenished from time to time by a search through the shop for unmarked ones belonging to others—custom making this an honorable vocation. It seemed to me that, of all men solaced by Raleigh's discovery of tobacco, boiler makers exceed. Every cheek was swollen with what to-day would be termed a liberal portion of "Battle Ax" or "Polar Bear." I recall an old "holder on" who often, after being coiled up on a gunny bag in a 36-inch cylinder boiler for a few hours, resembled an oasis or a floating island in the Red Sea.

But notwithstanding the work was gotten out expeditiously, neither the strength nor skill of the men were overtaxed by the necessities of the times, and good prices were realized. Competition was not so keen; to almost every shop belonged a certain radius of surrounding miles from which to draw the business. Boilers in transportation did not pass each other on their way from coast to coast as they do now, nor did the business occupy the place in engineering science where it stands to-day; in fact, drawings for the boiler shop were considered superfluous. If one, by accident, found its way there, it generally proved a puzzle and an object of dismay, but in the corner back of the layer out's trestles was an immense pile of strips, templates, &c., that represented every tank, smoke pipe and boiler ever constructed in that shop, each template marked with white lead to correspond to a memorandum in a brown paper backed book carried by the layer out—frequently one side of the pages in this book exploited the benefits derived from using Hostetter's Stomach Bitters or Dr. Janes' Soothing Syrup.

The foreman in those days was usually the most skilled workman in the shop, having graduated through the various stages of apprenticeship from rivet heater to flanger, which latter was usually the highest paid workman. He was supposed to, and often did, perform the most difficult jobs that came into the shop. His ability to get work accomplished quickly depended largely on the confidence inspired in the minds of his men of his workmanship and the example he set. His sanctum was a little office in one corner, the two sides looking into the shop being inclosed to permit his surveying his smoky domains, due to the flange fire at the other end of the shop pouring out its volume of inkiness. At a certain time in my existence it seemed to me that all he could see was the pyrotechnic display of a myriad of stars ascending from the rivet heating pot, while the boy fished in vain for the lost rivet that was rapidly disappearing into the air, to the accompaniment of the double rattle of the riveter's hammer calling for one "spitting hot."

All this represents the past, nor is it as exaggerated as our present would lead us to think, if most of us had not passed through it all; but it was a step in the successful evolution leading to the present. If we forget the intervening steps, our business to-day must seem like the realization of a fanciful dream. We pass from the old shop to the new, and are confronted by an immense, roomy steel structure, well windowed and high roofed, every nook and corner indicating intention well thought and conceived. The floors of many of these shops are now of cement, so graded as to drain into sanitary arranged sewers, fires are properly hooded to convey away all smoke and gases. Large tools, electrically, pneumatically and hydraulically driven, are so placed in positions as to afford every facility for the rapid handling of work. Powerful and gigantic cranes pick up and whirl from end to end of the shop complete boilers of a weight and size that causes the uninitiated to stare in amazement; multiple spindle drills and punches, ingenious machines that cut out elliptical shaped manholes, planers, rolls, flanging and riveting machines, convert the largest size and heaviest sheets made into the intricate shapes and designs that go to form a modern boiler.

The old time foreman is displaced by a superintendent, with a corps of assistants, including draftsmen, foremen, layer out, &c., and the boiler is fully constructed on paper before the work commences in the shop. Furnishing estimates involving in one proposition thousands and thousands of dollars has become an art, entailing a thorough knowledge of prices of material in the iron and steel market, and in intuition regarding possible fluctuations in costs, time of delivery, &c. The successful superintendent who is doing this to-day is frequently selected from among those technically trained, whose knowledge of matters pertaining to his business outside of the shop must equal that of his grasp of affairs on the inside. Indeed, his success is only limited to his abilities as a mechanical engineer, with the possibilities of the future unlimited.

In conclusion, may we not, with pardonable pride, both individually and as an association, accept credit for this revolution in methods in our trade affairs? Individually, every boiler manufacturer has added his atom of progress; collectively, we, as an association, have reached an age which, accompanied by our achievements, permit a modest expression of self glorification. It cannot be gainsaid that the formulation and adoption of a quality of materials embracing advanced chemical and physical properties has been a widespread benefit, acquainting the steel and iron manufacturers with our views, resulting in a uniform output from their mills. This must have been of inestimable value to them, as previous to our organization we all held individual ideas as to quality of materials, thus entailing upon the steel manufacturer the making of many brands; and I speak with positive knowledge of the fact that the number of boiler makers in this country (not members of our association) who follow in our lead, by embodying in their specifications our standards, is as surprising as it is gratifying, and in this respect the admirable work which we are accomplishing unknowingly is, in our modesty, not given its true value. These remarks may also well apply to our boiler specifications; even if there be some fellow manufacturer unwilling to accept our high standard, the prospective purchaser, in his search for information, very often obtains our requirements and insists on their being complied with. Again, when engineers are requested to furnish plans and specifications to steam users, it will be frequently found that our good precepts are embodied therein. Therefore, congratulations may come easily to the association, if not for the quantity of good performed, for the quality. And I would personally extend to the members of the association my

*Read before the American Boiler Manufacturers' Association Buffalo, August 14, 1901.

heartiest appreciation, not only for the advantages I have derived in the search for knowledge and information pertaining to my business, but also to the nearer relation into which it has brought me socially with representative men so closely identified in the similar walk of life.

Trade Publications.

Belting.—The Charles Munson Belting Company, Chicago, have issued their seventeenth annual catalogue. The company's general offices are located at 38 South Canal street, while their factory occupies a large building at 33 and 35 Ontario street. The manufacturing plant has recently been renovated, remodeled and enlarged, much new machinery having been added to increase the productive capacity of the factory and to meet the growing demand for Eagle belting. The company claim that they have one of the largest and best equipped belt factories in the country. The catalogue contains interesting information regarding the manufacture of leather belting and the processes which are followed in the company's factory, illustrations being given of some of the principal machines. The catalogue contains price-lists of belting, tables giving the circumferences of pulleys, tables on transmission of power, and numerous illustrations and price-lists of supplies for power transmission, including tools used in repairing belting.

Ratios of Tin Plate Sizes.—A book that will be of value and convenience to all who use tin plate has just been issued by the American Tin Plate Company, New York. It is entitled "Ratios of Squares and Odd Sizes of Tin Plate." The book, which is copyrighted, is 5½ x 10¼ inches in size, and has 30 pages of fine paper, and is well printed and bound with gilt edges in a black leather cover. The opening page is used to enumerate the variety of goods manufactured by the company, while the second page gives rules for using the various tables and explains the use of the ratios provided. Tables are also presented giving the United States standard gauge and weights for sheets, the standard weights and gauges of tin plates according to trade terms, and the net weight per box of tin on the basis of 112 sheets of 14 x 20, also of taggers tin and trunk iron. By the use of the ratios with the tables, by dividing or multiplying the price or base price, the weight or base weight, with the number of boxes given, the equivalent number of base boxes, the ratio of sizes not given, the ratio of irregularly packed boxes or the ratio of extra long sheets can be readily determined. The book will be valuable for reference to all who use tin plates, as with its aid all required information regarding weights, sizes, &c., of tin plates can be readily obtained without delay.

The Herculean Arch.—This is the name given to the flat arch—terra cotta—manufactured by Henry Maurer & Son of 420 East Twenty-third street, New York. Since the introduction of this arch it has been the gratifying experience of the company to find that whenever it has been specified by an architect the subsequent construction has commanded his approval. Erected under the direct supervision of the company the arch presents, when completed, a smooth and unbroken surface, the blocks being uniform in size and shape, there being no keys or skews necessary. The key irons used are well imbedded in Portland cement, and further encased in terra cotta fire proof material of never less than 2 inches thickness, thus being removed from contact with fire. This arch has been approved by the New York Building Department, and adopted by the United States Engineering Corps. In order to meet the requirements of the Building Department of Philadelphia to cover all classes of buildings, a maximum test of 600 pounds to the square foot, the company erected in that city an arch spanning 18 feet from wall to wall which was loaded with 108,000 pounds of hard brick, distributed over a surface of 180 square feet, or 600 pounds to the square foot, as required. The load remained on from May 21 to June 10 last, and during all that time the arch showed no perceptible deflection. The design and construction of the arch secured the indorsement of the department. The blocks are 12 x 12 inches, and vary in depth from 8 to 12 inches, as required. In the sides of the blocks are grooves to accommodate T irons, which are 1½ x 1½ x 3-16 inches. The blocks laid end to end, embedded in cement the length of span designed, present a continuous groove in which, previously filled with cement, the T iron of the length of the span is inserted. The next groove abutting the first on the sides takes in the other flange of the T iron, and the entire rod is therefore completely covered with cement and buried in the terra cotta block over 2 inches every way.

Roller Bearings.—The Roller Bearing & Equipment Company of Keene, N. H., have issued an attractive catalogue describing their many forms of roller bearings. Many users of roller bearings attempt to run them on soft steel or cast iron surfaces. Where the pressure is heavy this frequently leads to trouble, because of the cutting action of the hardened steel rolls. Investigation has shown that where bearings have failed to give satisfaction the fault is nearly always in the bearing surfaces. To meet this difficulty the company are prepared to furnish steel rings hardened and ground to gauge inside and out, so as to fit over the shaft, as shown inside the box or housing, as a bushing over the bearing. With this construction the maximum efficiency is insured and maintained, wear is lessened and the bearing will run years without trouble. An important advantage possessed by their antifriction roller side bearing for railway cars lies in its strength, simplicity and small number of parts. The rollers are of the best quality of hardened steel. The top surface of the plate is also hardened and ground.

Electric Locomotives.—The Jeffreys Mfg. Company of Columbus, Ohio, have prepared a catalogue dealing with their various types of electric locomotives for mines, steel works, factories, plantations, &c. These machines range in weight from 2 to 20 tons, and each is equipped with either one, two or three motors. In all cases the entire weight of the locomotives is utilized in securing tractive effort on the rails. Their standard locomotive is arranged so that the motorman is seated in the center protected from injury by the frame of the locomotive. In storage battery locomotives for mine haulage two general types are made; for mines having ample hight of entry the battery is supported directly on the frame of the locomotive, thus adding its weight to that of the locomotive; for low veined mines the battery is carried on a small truck or tender, thus reducing the hight of the holder to a minimum. This arrangement reduces hauling capacity, but accommodates itself to very low entries and rooms and reduces the amount of brushing which would otherwise be necessary. While either of these types is suitable for use about yards and buildings of industrial plants a larger pattern provided with a cab for the operator is also built. This is suitable for switching standard freight cars and doing duty where conditions prevent the use of the power system.

The Hudson Rolling Mill Company of 150 Nassau street, New York, are sending out a circular relating to their Babbitt metals, including white bronze, a deoxidized nickel babbitt, signal metal, deoxidized and nickel hardened and motor metal.

August pig iron shipments from Alabama and Tennessee were 123,513 tons, and from the Birmingham district alone 56,987 tons. There were exported 131 tons. Cast iron pipe shipments from Alabama and Tennessee aggregated 14,550 tons, from the Birmingham district alone 6576 tons. One hundred and thirty-four tons were exported. Steel billets shipments from the steel mill at Ensley were 5256 tons.

Max Daunert, the American representative of Schuchardt & Schutte of Berlin, sailed for Germany last Thursday. He will be abroad for several months.

Charles F. Brooker, president of the American Brass Company, has returned from an extended European trip.

HARDWARE.

THE manner in which the financial and mercantile interests have withstood the shock occasioned by the President's lamented death is not only a renewed testimony to the strength of our institutions, but also an indication of the substantial basis upon which the prosperity of the country rests. It is evident that the wheels of commerce and industry will continue to revolve and that the country will still enjoy a widespread prosperity in which practically all classes will have their share. In connection with President Roosevelt's induction into office, apart from the personal respect and confidence with which he is regarded, it is gratifying to note that he has already indicated his recognition of the importance of maintaining and extending American trade, a policy which wisely carried out will give to this country, in its relations with the markets of the world, a still more commanding position.

That the consolidation of manufacturing interests, even though covering a good proportion of the product affected, does not in itself secure exemption from the difficulties and misfortunes of trade finds another illustration in the annual report just rendered by the Standard Rope & Twine Company. From this it is seen that the business of the past year was unprofitable, resulting in a loss of half a million as against a small profit the year preceding, while on $12,000,000 of capital stock no dividend has ever been paid. Some of the troubles of the company are ascribed to the violent fluctuations during the year in the price of hemp, of which under a heavy advance the company found itself short, and so was obliged to cover at a loss. The arrangements made for the marketing of their products also proved expensive and unsatisfactory. Meanwhile outside competition has been aggressive and growing. In the opinion of those who are well informed in regard to the matter the very liberal values at which the different plants were originally taken in has much to do with the difficulties by which the company have been confronted. Experience in this case enforces anew the futility of looking to consolidation as a sure remedy for the ills of trade. Wisely effected and administered the union of manufacturing interests is often permanently advantageous, but there are peculiar dangers connected with both the organization and the administration of such enterprises.

There are some indications that syndicate buying will be one of the subjects which will occupy the attention of the National Hardware Association at the coming Cleveland meeting. Efforts are being made to secure the opinion of the leading jobbers as to how the matter can be regulated or controlled so as to conserve jobbing interests. The matter is invested with peculiar difficulties on account of the firm hold the system has in the trade, a large proportion of the members of the association themselves making use of the services of syndicate buyers.

There are unquestionably both advantages and disadvantages connected with the system of syndicate buying as carried on in the trade. For many years this has been an important source of information to houses embraced in the syndicates, and it has probably been found an efficient help in keeping in close touch with the market and in making purchases on the most favorable terms. At the same time there are doubtless considerations on the other side. It has often tended to encourage irregularities in the market and to break down prices. While the business, conducted in an open and straightforward way with due regard to the manufacturers' interests, gives little ground for criticism, abuses are sometimes connected with it which render it the object of special opposition from manufacturers and jobbers. There seems to be little probability that anything that can be done will do away with the practice, but it is on every account desirable that the abuses connected with it should be brought to light and corrected. To this end a discussion of the matter in all its phases would be advantageous. It is, therefore, an eminently suitable subject for consideration by the jobbing trade, who, strangely enough, are the principal patrons of the system and the ones whose interests are most antagonized by it.

Condition of Trade.

There was unquestionably something of a disturbance to the regular movement of business as a result of the assassination of the President. The public mind was so engrossed by the tragedy that attention was for the time taken away from business. There was also a question as to the effect the President's death would have upon commercial matters, and an element of serious uncertainty was thus introduced. Some entertained apprehensions that there would be something of a financial revulsion which would interfere with commercial and industrial interests, and some grave prognostications were thus indulged in. Fortunately the course of the market has been most reassuring, and the confident tone which prevails indicates the strength of the situation and the ground for anticipating a continuance of existing prosperity. Things in trade circles are quickly resuming their wonted aspect and activity. The termination of the Steel strike is one of the elements which contributes to the confidence of the trade. It is recognized that an important gain has been made in stablishing the principle that manufacturers are entitled to run their own business. The coming of the strike, while interfering with business in a way that caused considerable inconvenience, had probably a good deal of influence in maintaining the market directly affected at a critical time when a break in some lines might otherwise have occurred. The shortage of goods of many kinds, owing to inadequate supply of material, still continues, but with the renewed operation of the mills it is anticipated that this condition will soon be corrected. Comparatively few manufacturers have anything like full stocks of goods, and the supply in hands of jobbers and retailers is in many lines light, if not broken. It will thus be some time before there will be an opportunity for the accumulation of goods, and meanwhile it is expected that the demand will be large.

Chicago.

(By Telegraph.)

Some of the jobbing houses report a slightly reduced volume of business, which they attribute to the President's death. The country was so shocked at the assassination that undoubtedly for a time it checked attention to business. It is not believed that the influences thus exerted will be more than temporary. The confidence felt in the new President is so great that all business interest will speedily recover from the shock and the tide of affairs will proceed as usual. Everything is in splendid condition—stocks of goods are light, prices are well sustained and preparations must be made for the winter. Jobbers report increased difficulty in endeavoring to fill their customers' orders for various

kinds of winter goods. Efforts are being made to substitute wherever possible. Dealers who have placed orders for special classes of merchandise are endeavoring to secure something that will take their place. The announcement of the termination of the great strike is received with pleasure, as promise is thus conveyed of early relief in the lines affected by a shortage of Tin Plate, Steel Sheets and Hoops. It will probably be a week or more until mills get into such condition that shipments can be depended upon. Even then the shipments made will have to be divided among many customers, and for a considerable time the market will be short of stock really needed. The statement made last week that jobbers had absolutely no Tin Plate on hand should have read Coke Tin Plates, as large jobbers have quite a fair stock of Charcoal and Terne Plate. The jobbers of Heavy Hardware report no diminution in the volume of their business. If any falling off has occurred in the number of orders it is more than made up by the increased quantities now being purchased by many of their customers. Manufacturing consumers are in urgent need of all kinds of material, particularly of Iron and Steel.

St. Louis.

(By Telegraph.)

The demand for Hardware continues along recent lines, and it is hoped, with gratifying news of the settlement of the labor troubles, that the trade will soon feel beneficial effects. A troublesome feature which has for some time confronted and still confronts the trade is the scarcity in a number of lines of manufactured goods. It may be some time before relief in this direction is felt, and until the situation is relieved it will remain a source of worriment. There seems no inclination to advance prices, although it might appear from the facts in the case that manufacturers would have reasonable ground for taking this course.

St. Paul.

Farwell, Ozmun, Kirk & Co.—Trade has continued to move along in the same even way that has characterized it throughout the year, there being comparatively little difference between the sales of the respective months as they go by. The cause of this is the fact that the retail dealers throughout the year have bought only for actual wants, together with the additional fact of an abundant harvest, thus creating a steady demand for goods which will doubtless continue during the year.

Prices have generally been firm, with a tendency to advances in some lines, though not in very many lines, as wholesale dealers as well as manufacturers generally have been very conservative in their advances through their desire not to check consumption.

The difficulty in obtaining some goods has not been relieved, while in other lines there have been freer shipments. The stringency has been most acute in Builders' Hardware, and also in those goods that are largely dependent for their material upon the mills affected by the strikes.

Now that the steel company strike is understood to be settled we may expect that supplies will be more readily furnished and gradually requirements will be more promptly met.

The country stands appalled at the assassination of President McKinley.

It is probable that there will be very little disturbance in mercantile and manufacturing conditions from this deplorable event, as the country justly has great confidence in Mr. Roosevelt.

The wisdom in the selection by political parties from our best men in public life for the office of Vice-President is shown conspicuously in this grave emergency.

Political parties and voters have given too little attention to this vital matter, and, as a result, there have been men nominated and elected to the office of Vice-President who were wholly unfit for the duties of the Presidential chair.

It is one of the consolations in this hour of great bereavement that the nation has great confidence in the new President, and believes implicitly that he will devote his great energy and his high ideal of personal and public duty to the promotion of the best interests of the country and along the lines followed so successfully by him who has fallen at the hand of the assassin.

Boston.

Bigelow & Dowse Company.—New England in common with the whole country is mourning the untimely death of our good President. Whatever a man's politics, business or profession, all bow in sorrow at the national loss.

However deep one's sorrow may be, the natural instinct of all Americans is to look about for the result on the future.

Thanks to the founders of our Government, its life and success are not dependent on any one man, and there is always another to take up the work and carry it to completion.

We are particularly fortunate in our new President and his promise to continue present policies and conditions. This assurance will go far to allay any unnecessary alarm, and it would seem that the present prosperity must continue.

The end of the strike is an important factor. With all the mills in operation the production will soon make up the shortage of material caused by the strike. The conditions existing before the strike, looking for overproduction and lower prices, will not be realized as soon as they would have been, but are sure to come.

With manufacturers short of stock and mills so far behind orders it would seem that present prices might be maintained through the fall trade.

The farmers in New England have been favored with good crops of hay and potatoes and other farm products. All the summer we have had abundant rains, and it is a pleasure to be in the country, where all nature is bright as in June.

The summer travel has never been greater, and the amount of money left here by our visitors is an important factor in our financial condition. We have a good trade in New England, and we see no reason why it shall not continue.

Louisville.

W. B. Belknap & Co.—Business continues in the same active state, despite the depressing influences of the past week from the Buffalo tragedy. We doubt if the patriotic spirit ever ran higher than it does at present and the loss of our great leader and President, brave and gentle in his extremity, will inspire us with it still more, we firmly believe.

The strike, the condition of the cotton crop, the railroad earnings and the things which interest us day by day shrink into insignificance in the presence of the death of so distinguished and much beloved a man.

The first question that strikes the business world is what effect will this have upon the country, for a check to industries, whether agricultural or manufacturing, is a serious matter for the millions at work. Comparisons are freely instituted between this and the time of Garfield's death, which was in a year when the corn crop failed, eight years after a previous panic, and at the climax of a prosperous up-grade. Some who are inclined to look on the dark side of things call attention to the fact that the New York banks owe over twice as much to their depositors as they did at that time, which great sum could not be readily paid if a panic struck everybody in a heap. On the other hand, we are much more of a nation, feel stronger and feel more sure of ourselves. The financial bogey, free silver, is all gone and prices are not so inflated that any tremendous collapse is feared. The first sign of decrease in business—viz., decline in railroad earnings—has not shown itself. On the contrary, there is a strong demand for goods which the manufacturers find it extremely difficult to supply, and these have to be transported. Our agricultural products, which are huge, are bringing good prices abroad, which is an assurance of revenue and prosperity to this country, besides which we are a creditor nation largely, instead of a debtor nation.

All of these things, we think, should remove apprehension from the average mind, and we do not anticipate any serious disturbance.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—The attempted assassination of the President calls attention of the financial interests of the country to the towering but frail structure that has been reared on credit in the past three years. The gamblers of Wall street, through the talked of issuing of clearing house certificates and supplication for financial aid from the treasury, hope to tide over their present necessities and prevent, at this time, the collapse that is bound to come sooner or later, bringing ruin in its wake for so many. When the crash comes will the real business interests of the country be taken care of by the "powers that be," as are the speculative interests at this time, or must they shift for themselves? A warning should be sounded by the press directing attention of the easy going business men of the country as to what they will be up against, giving them time to scurry for cover against the storm brewing.

Trade is somewhat slower than it has been of late, but that is easily accounted for by the abnormal business done in July and August. As soon as the farmers have the result of their year's work secured and under roof there should again be a quickening and old conditions prevail.

It is too early as yet to feel improvement in collections, but this is bound to be felt in the near future.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—The Hardware business in this section of the country continues to be very satisfactory. The salesmen on the road are getting nice, well assorted orders and prices are fairly well maintained. Quite a number of new stocks have been bought recently in this market. The sale of fall and winter goods conntinues to be heavy and is getting still larger in volume as the season advances. The movement on Heating Stoves, Coal Hods, Stove Pipe and Stove Boards is especially large. The trade in the Builders' Hardware department is brisk. A number of new buildings are being erected in this city and the surrounding country and the class of Hardware that is being used in them is better than usual. All the contractors and carpenters have about as much as they can do. Collections are reported to be in good shape.

Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—Considerable improvement is noticeable in the volume of business now being transacted. Cooler weather has influenced buyers to purchase more freely of fall and winter goods. Orders continue to come forward in encouraging volume, and in some lines liberal quantities are specified. The large amount of current business and the heavy consumption constantly going on, together with the generally prosperous financial condition of the purchasing community, are features of the highest commercial importance and carry with them assurances that the wheels of commerce will continue to revolve unimpeded for some time to come.

NOTES ON PRICES.

Wire Nails.—The demand for Wire Nails is of good volume. It is expected that mills will soon be in position to supply the requirements of the trade more promptly. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots	$2.30
To jobbers in less than carload lots	2.35
To retailers in carload lots	2.40
To retailers in less than carload lots	2.50

New York.—The local demand for Wire Nails continues in about former volume. Quotations are as follows:

To retailers, carloads on dock	$2.53
Small lots at store	2.60

Chicago, by Telegraph.—The American Steel & Wire Company have succeeded by strenuous efforts in keeping their Joliet mills supplied with Wire Rods, and have thus prevented the closing of any part of those works. The starting of the Joliet Works of the Illinois Steel Company will, in a week or so, furnish an output of Wire Rods which will relieve all apprehension relative to the local supply of Wire Nails and other products. The demand for Wire Nails shows no falling off. Stocks in manufacturers' hands are very low and jobbers are urging more prompt shipment. This indicates that stocks are also low in the hands of jobbers and dealers. Prices are maintained at $2.45 for carload lots and $2.50 for small lots.

St. Louis, by Telegraph.—Wire Nails are still in very good demand and an easier feeling exists in the trade. It is expected that manufacturers will soon be able to accumulate stocks which have run low. We quote carload lots to retailers at $2.50, base, and less than carload lots at $2.55 to $2.60.

Pittsburgh.—There is nothing of special interest to note this week in the Wire Nail trade. The ending of the Steel strike will probably remove any temporary embarrassment caused in the filling of orders promptly for Wire Nails. There is more or less softness in prices and concessions continue to be made in some districts where competition is keen. We quote, f.o.b. mill, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots	$2.30
To jobbers in less than carload lots	2.35
To retailers in carload lots	2.40
To retailers in less than carload lots	2.50

Cut Nails.—Conditions in the Cut Nail market remain unchanged. Trouble is experienced in getting prompt shipments. Quotations for domestic trade are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots	$2.05
Less than carload lots	$2.10 to 2.15

New York.—The local market is experiencing a moderate demand for Cut Nails. The recent advance in price is not held to in all cases. New York quotations for carload and less than carload lots are as follows:

Carload lots on dock	$2.18
Less than carload lots on dock	2.23
From store	$2.18 to 2.30

Chicago, by Telegraph.—The demand for Cut Nails is steady, with prices of small lots maintained at $2.35.

St. Louis, by Telegraph.—The demand in the Cut Nail market is reported to be good, and prices remain firm. Small lots from store are quoted from $2.30 to $2.35.

Pittsburgh.—There has been more or less difficulty in getting prompt shipments of standard sizes of Cut Nails owing to the strike, because of which the Cut Nail mills were unable to get Steel as fast as needed. Now that the strike is ended it is probable that the mills will soon be in position to fill orders for Cut Nails promptly. There is not much doing in export business in Cut Nails and prices for this trade are somewhat lower than for domestic. The general condition of the Cut Nail market is very satisfactory to the mills. We quote for domestic trade, f.o.b. Pittsburgh, plus Tube freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots	$2.05
Less than carload lots	2.10

Barb Wire.—The tone of the Barb Wire market continues strong, and demand large. Manufacturers are now able to supply the demands of the trade more satisfactorily. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots, Painted	$2.60
To jobbers in carload lots, Galvanized	2.90
To jobbers in less than carload lots, Painted	2.65
To jobbers in less than carload lots, Galvanized	2.95
To retailers in carload lots, Painted	2.70
To retailers in carload lots, Galvanized	3.00
To retailers in less than carload lots, Painted	2.80
To retailers in less than carload lots, Galvanized	3.10

Chicago, by Telegraph.—Manufacturers of Barb Wire have so considerably increased their facilities that they are handling the trade much better than last spring. Although the demand continues very heavy, deliveries are now fairly satisfactory for the jobbing and retail trade. Carload lots are quoted at $2.75 for Painted and $3.05 for Galvanized. Less than carloads are quoted $2.85 and $3.15 respectively, with these prices firmly held.

St. Louis, by Telegraph.—Business in the Barb Wire market is reported to be very satisfactory. Inquiries are good and active, and preparations are being made to supply the large demands which are usually made in October. Jobbers quote carload lots of Painted at $2.85, and Galvanized at $3.15, less than carload lots at $2.95 for Painted, and $3.25 for Galvanized.

Pittsburgh.—We note a continued active demand for Barb Wire and the mills are able to ship their product as fast as made. The ending of the Steel strike will insure a prompt supply of Steel to the mills, and there should be no difficulty in getting prompt shipments. There is a good deal of competition now in Barb Wire from outside mills, but prices are being well maintained and are only occasionally shaded for very desirable orders. For domestic trade we quote: Galvanized Barb Wire, $2.90 in carload lots to jobbers, and Painted, $2.60. Terms 60 days net, 2 per cent. discount for cash in 10 days, f.o.b. Pittsburgh.

Plain Wire.—An active demand is reported for Plain Wire, particularly of sizes suitable for baling purposes. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

Base sizes.	Plain.	Galv.
To jobbers in carload lots	$2.25	$2.65
To jobbers in less than carload lots	2.30	2.70
To retailers in carload lots	2.35	2.75
To retailers in less than carload lots	2.45	2.85

The above prices are for the base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

6 to 9	Base		$0.40 extra.
10	$0.05 advance over base		.40 "
11	.10 " " "		.40 "
12 and 12½	.15 " " "		.40 "
13	.25 " " "		.40 "
14	.35 " " "		.40 "
15	.45 " " "		.75 "
16	.55 " " "		.75 "
17	.70 " " "		1.00 "
18	.85 " " "		1.00 "

For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

Chicago, by Telegraph.—The production of Plain Wire has been increased and the mills are not now so much in arrears. An active trade is reported, particularly in sizes suitable for Baling Wire. The scarcity of Bale Ties causes a continuance of the great demand for Plain Wire for this purpose. Carload lots of Wire are held at $2.40 and small lots from stock at $2.50.

Pittsburgh.—The mills making Plain Wire are somewhat behind in deliveries and demand is as heavy as ever. For domestic trade we quote:

To jobbers in carload lots	$2.25
To jobbers in less than carload lots	2.30
To retailers in carload lots	2.35
To retailers in less than carload lots	2.45

Galvanized Wire up to No. 14 is 40 cents advance on Plain; Nos. 15 and 16, 75 cents advance, and Nos. 17 and 18, $1 advance. Terms are 60 days net, with 2 per cent. off for cash in 10 days, f.o.b. Pittsburgh.

Wrought Iron Padlocks.—The market in Wrought Iron Padlocks is not in an entirely satisfactory condition, as there is some irregularity in prices and some low quotations are being made.

Registers.—While a good proportion of the manufacturers of Hot Air Registers, Ventilators, &c., have adopted the new list referred to in our last issue, a good many of the jobbers are still selling from the old list. There is also some irregularity in demand.

Corn Poppers.—An advance has recently been made by the leading manufacturers of Corn Poppers. The demand for this line is, as usual, active at this season.

Shovels and Spades.—Little action of general interest was taken by the manufacturers at their recent meeting. Existing prices were, however, confirmed and the situation so far as the association is concerned remains substantially as before. The amount of outside competition renders it probable that present prices cannot very long be maintained, and what the policy of the association will be remains to be seen.

Scythes.—The approaching meeting of the manufacturers of Scythes will be awaited with interest. It is generally expected that some radical action will be taken, as association prices are universally regarded as unreasonably high, and their maintenance has been a source of much dissatisfaction in the trade.

Cordage.—The position of Hemp is firm and the cost of Sisal Hemp is near to the selling price of Rope. The price at which Sisal Rope is held affects the demand and Jute Rope is being ordered more freely as a substitute. Many buyers are unwilling to pay present prices for Sisal Rope, and the proximity of the cost of Hemp to the price of Rope causes manufacturers to be indifferent sellers. It is a waiting game on both sides. Manila Hemp has also advanced, but its cost is not so near the price of Rope, which is being ordered more freely. Owing to the strong position of Hemp manufacturers see no reason why Rope prices should be lower for some time. The condition of the Rope market is due to competition among manufacturers, who agree that present prices do not represent fair profits. A general quotation for Sisal Rope, on the basis of 7-16-inch and larger, is 8½ cents, with a ¼-cent rebate for larger quantities. These figures are shaded ¼ cent by some makers. Manila Rope is held quite firmly at 10½ cents, with a rebate of ¼ cent. per pound for larger quantities.

Glass.—The demand for Window Glass continues moderate, and the market is without new or interesting features. According to reports, there was a proposition before the Glass meeting held at Detroit about two weeks ago to reduce prices. The proposition was not favorably received, but an intimation of the necessity of lower prices for the preservation of the Glass combine is taken as an indication of the growth of co-operative factories. A paper devoted to Window Glass interests makes a statement regarding the present productive capacity of the country, and compares it with the consumptive capacity. We quote as follows: There are now over 3300 pots ready to make Window Glass, if they can be manned. This number of pots is capable of turning out 1,063,040 boxes per month, or 5,315,200 boxes in five months, to which may safely be added 50,000 boxes of imported Glass per month, or say 600,000 boxes per year. That will give us 5,912,200 boxes of available Glass if all the factories run five months from, say, November 1. The average consumption of the country is only 450,000 boxes per month, or 5,400,000 boxes per year. In other words, our factories are able to make 515,000 boxes more Glass by operating five months than the country can consume in an entire year.

What action the combine will take in the future to control the market remains to be seen. Jobbers' quotations are as follows:

	Discount.
Less than car lots, from store	80 and 20 %
Carloads, f.o.b. factory	85 and 5 %

Paints and Colors.—*Leads.*—The recent advances in the price of Linseed Oil, and the consequent unsettled condition of the market, are likely to affect the demand for White Lead in Oil. Owing to the previous rapid decline in the price of Oil, irregularities in Lead prices became more pronounced, but the higher price of Oil may have the effect of steadying the Lead market. Quotations are as follows: In lots of 500 pounds or over, 6½ cents; in lots of less than 500 pounds, 7 cents per pound.

Oils.—*Linseed Oil.*—On September 12 City Raw Linseed Oil was advanced to 55 cents per gallon in lots of five barrels or more. Lower prices previously ruling had stimulated demand, and spot supplies had been about exhausted. On the 16th inst. another advance was made in City Raw, in five barrel lots or more, to 65 cents per gallon. Boiled Oil is 2 cents per gallon advance on Raw. The cause of the last advance is attributed to a sharp advance in seed. Outside mills are also asking 65 cents for Raw Oil. In fact, there is little Oil obtainable for prompt delivery, and quotations on future deliveries are for prompt acceptance. From present indications no relief is expected until new seed comes into the market more freely.

Spirits Turpentine.—The week has been one of little activity in the Turpentine market. Large buyers are not in the market, and demand has been confined to jobbing lots. Prices have been firm and unchanged at

the following quotations, according to quantity: Southerns, 36½ to 37 cents; machine made barrels, 37 to 37½ cents per gallon.

NATIONAL HARDWARE ASSOCIATION.

The Convention Programme.

The programme for the approaching annual convention of the National Hardware Association, which will be held in Cleveland on October 9, 10 and 11, has been completed. The convention will be called to order on Wednesday, 9th, at 9.30 a.m., the first session being an open one, manufacturers and their representatives and the ladies being invited to participate. After opening exercises, including remarks by the president, Richard W. Shapleigh, addresses will be made by Hon. Tom L. Johnson, Mayor of Cleveland, tendering the freedom of the city; by Chas. W. Pack, president, on behalf of the Cleveland Chamber of Commerce, and by S. D. Latty on behalf of the manufacturers of Cleveland. The president's annual address and the secretary-treasurer's report will also be features of this session. There will also be a collocution on the subject "How Can Manufacturers of Hardware and Kindred Lines Most Economically Distribute Their Product?"

Wednesday afternoon the association will hold an executive session, when reports of various committees will be presented. The subject of the "True Method of Computing Cost" will come up for discussion. The contents of the Question Box will also be dissected.

The annual smoker will take place on Wednesday evening. The ladies will be invited to attend this function.

On Thursday morning another executive session will be held, and among the business transacted will be the consideration of committee reports and the discussion of matters brought up through the Question Box.

Thursday afternoon will be entirely given up to a drive about the city tendered by the manufacturers of Cleveland. In the evening an open session will be held, the features of which will be collocutions on the subjects of "Outlook for the Approaching Year—Will Present Range of Prices Probably Prevail?" and "Trade Papers—Their Relation to Jobbing Interests."

There will be two sessions on Friday, morning and afternoon, both of them of an executive character. In the evening an elaborate banquet will be tendered the delegates and other visitors and the ladies accompanying them at the Cleveland Chamber of Commerce, the hosts being the manufacturers of that city.

The outlook for a large attendance of the members is extremely propitious, as we understand that a more numerous representation than ever before have signified their intention to be present.

Chicago to Entertain Western Delegates to the Jobbers' Convention.

At a recent meeting of manufacturers and manufacturers' agents of Chicago and vicinity a committee was appointed to make arrangements to entertain the delegates and their ladies, who will pass through Chicago en route to the National Hardware Association convention, which will be held in Cleveland October 9, 10 and 11. The committee is as follows: W. H. Bennett, Chicago manager Reading Hardware Company; S. S. Gould, vice-president St. Louis Shovel Company, and H. H. Roberts, Chicago manager *The Iron Age*. The committee have arranged an enjoyable programme, complete details of which will be sent those who are expected to participate. The present plan is to have the delegates meet at the Technical Club house early in the afternoon of October 8, where carriages and automobiles will be in waiting for a drive through the parks and residential districts of Chicago. Returning to the club house, the delegates will sit down to a banquet, after which they will board the 10.35 p.m. train, reaching Cleveland at 7.40 a.m. Wednesday, October 9, in ample season for the opening session. The entertainment will be given under the auspices of the recently organized Hardware and Manufacturers' Club of Chicago, and the following invitation has been sent to all delegates west of Indiana:

The Hardware and Manufacturers' Club of Chicago requests the pleasure of the presence of yourself and ladies on Tuesday, October 8, 1901, from 12 o'clock noon until half after 11 in the evening.

It is also planned by the committee to arrange for sleeping car accommodations from Chicago to Cleveland, and delegates are invited to correspond with H. H. Roberts, secretary of the committee, who will gladly arrange for such accommodations as are requested.

PHILADELPHIA HARDWARE MERCHANTS' AND MANUFACTURERS' ASSOCIATION

At a meeting of the Hardware Merchants' and Manufacturers' Association of Philadelphia, held on the 17th inst., the following resolutions relative to the death of Mr. McKinley were adopted:

Whereas, President William McKinley has been struck down by the blow of an assassin and now lies in honored state in the Capitol of these United States, which he so ably and successfully served; and,

Whereas, Our whole country stands dressed in mourning to declare its sad sense of the loss sustained in his death, while from Maine to Texas and from the Atlantic to the far off isles of the Pacific is heard the tones of sorrow and the lamentations of grief; and,

Whereas, Even foreign countries join us in these demonstrations of grief and gracefully offer to share our sorrow in loving sympathy; therefore be it

Resolved, By the Hardware Merchants' and Manufacturers' Association of Philadelphia:

That we recognize the signal ability, courageous earnestness and personal integrity of our late President, and fully realize the fact that to him were presented some of the weightiest problems and responsibilities which have come to our country since the time of Abraham Lincoln.

That we appreciate his sterling character and his manful part in bringing to our land the public security and prosperity which it now enjoys, and feel that in losing him we lose a man faithful to a high sense of duty and self sacrificing, and devoted in carrying out whatever measures were necessary for our welfare.

Resolved, That, as we mourn his loss in being struck down by the hand of treachery, we rejoice that the life and work of President McKinley will for years to come be an inspiration and help to the youth of our land.

Resolved, That we place on record this minute of our affection and esteem, and pray that the Ruler of all nations, who has guided us so marvelously in the past, may be our refuge in years to come, and may now, in this time of sorrow, bring comfort and peace to those who mourn.

The entertainment which was to have been given to the Pennsylvania Wholesale Hardware and Supply Merchants by the association has been postponed for 30 days. The assassination of President McKinley has produced such a profoundly sympathetic feeling that it would be quite incongruous to do much entertaining at the present time, hence the postponement until the middle of the coming month.

NEW ENGLAND HARDWARE DEALERS' ASSOCIATION.

The first meeting of the New England Hardware Dealers' Association for the autumn and winter season was held at the United States Hotel, Boston, September 11, at 5 p. m., G. W. Burditt presiding. The business session was very brief. No formal entertainment having been provided at the close of an excellent dinner, J. W. Calderwood favored the company with several vocal selections, which were much appreciated, and President Burditt called upon Charles E. Adams of Lowell, who recently returned from a trip to Europe. While abroad Mr. Adams visited many of the boards of trade and in a general way observed mercantile and manufacturing conditions in Great Britain and Germany. Being president of the Massachusetts State Board of Trade, he was entertained by similar organizations in England, and his brief address referred particularly to the workings of these organizations, and especially of the English National Board of Trade, which consists of 86 associations. Mr. Adams said that a short time ago the London Board of Trade held a meeting at which were represented 250 boards of trade of Great Britain and Ireland.

DEATH OF A. L. BOLLINGER.

ALBERT LESTER BOLLINGER, president of the Sieg Iron Company, Davenport, Iowa, and well known in the Heavy Hardware trade, died suddenly on the 12th inst. from paralysis of the heart.

Mr. Bollinger was born at Lancaster, Peoria County, Ill., May 14, 1839. He was educated in the Lancaster public schools, afterward studying in the college at Abingdon, Ill. At the opening of the rebellion he took a prominent part in organizing companies of soldiers. Possessed of a fine tenor voice, he used it advantageously in the service of his country. In company with a friend, who had a gift for public speaking, he traveled from place to place singing patriotic songs to the crowds that gathered to hear the two, thus persuading many to enlist in the cause. He was not only a singer but a fighter as well, and served as a soldier at the front. He was captured and held a prisoner by the Confederates, but was afterward exchanged. Army officers soon discovered the business talent and executive ability that made him so successful in after life, and the close of the war found him serving as one of the secretaries in General Sherman's office in the field, the war records at Washington containing many pages of manuscript written in his fine hand. At the close of the war he went to Lancaster, Pa., where he spent a year perfecting himself in his calling of carriage builder.

In 1866 he moved to Geneseo, Ill., where he opened a carriage factory, and shortly afterward married Miss Emily D. Wills, who still survives him.

In 1873 he sold his factory to good advantage and moved with his family to Davenport, Iowa., where he became identified with the firm of Sieg & Williams, the predecessors of the present Sieg Iron Company. He represented this firm as a traveling salesman from that time until the death of Mr. Williams in 1887, when the Sieg Iron Company were organized, and he became their vice-president and secretary. In that capacity he served until the death of R. Sieg, in November, 1890, when he succeeded as president and business manager of the company, continuing to occupy that position until he died.

Mr. Bollinger's genial good humor, kindness of heart and great common sense won for him a host of friends among the fraternity of traveling salesmen, and with the customers of his house on the road. Everybody was glad to meet "Doc" Bollinger, to ride with him, to talk to him, for he was always good company, and his conversation was both entertaining and instructive. He knew his business from the bottom up. He knew from personal experience the requirements of the trade, and he studied the business and mastered its details, sparing no effort to make it a success. The business grew and thrived under his able management, and in July, 1900, the company were able to declare a stock dividend of over 11 per cent., thereby increasing the capital stock of the company to $100,000.

In spite of an intensely active commercial life he found time for wide reading and study, and was one of the best informed men of his community. He believed that self education was a duty that lasted through life and lived up to his conviction. He was a great traveler and intensely fond of books of travel and history.

In the capacity of buyer for his house he personally visited most of the factories in which were manufactured the goods handled by them. He studied the processes of manufacture and knew thoroughly the quality of goods. He kept abreast of the times and was always an enthusiastic advocate of progressive business methods. For a number of years he represented his company in the meetings of the Heavy Hardware Jobbers' National Union, in which he made many friends. In politics Mr. Bollinger was a lifelong Republican, ardent and enthusiastic in devotion to his party, although he never held public office of any kind.

Mr. Bollinger always had a passionate love for little children, finding much pleasure in their society and company. He was an ideal father, husband and grandfather, and the great delight of the last years of his life was to have them all gathered at his fireside. Many were his acts of kindness to friends and relatives, and to the poor and suffering. He was keenly alive to the sufferings of others, and he was intensely human in his sympathies. In business he was true to his engagements. What he promised he performed. He was a fine type of the modern merchant.

WITHINGTON & COOLEY MFG. COMPANY'S PAN-AMERICAN EXHIBIT.

The Withington & Cooley Mfg. Company, Jackson, Mich., have shown great originality and decided artistic taste in arranging the exhibit of their products at the Pan-American Exposition. The exhibit occupies a special booth erected for it in the Stadium. The booth is a canopy shaped building, 18 feet front and 14 feet deep, covered completely, except the roof, with black velvet and ornamented with polished Hoe Blades of various patterns arranged in letters and border designs. Around the eaves, gables and arches the ornamentation consists of Acme Weeding Hoe Blades with rosettes formed of Warren Hoe Blades, pointed upward. The lettering on the building is made of Blades of the company's small Three-Cornered Onion Weeder, reading on both sides,

Withington & Cooley Mfg. Company's Pan-American Exhibit.

"Rakes, Hoes, Forks," &c., and on the front of the booth reading "Farm and Garden Tools," with the monogram "W. & C." at either side. The corners of the booth are bound with Riveted Field Hoe Blades and the corner posts are ornamented with Long Handled Spading Forks. The railing inclosing the floor consists of wood D Handles, the spaces being filled with Thistle Cutters, the blades pointing upward. In the center of the booth is a continuously revolving display case with plate glass doors. The drum of this case is covered with black velvet and on it is arranged a fine assortment of the company's goods. At the rear wall is an arrangement of Long Tine Forks, Hoes and other Tools, with two American flags draped to the center, forming an appropriate decoration of a framed certificate of membership in the National Association of Manufacturers. This exhibit is believed to comprise a much more extensive variety of Tools than is usually shown, covering as it does Hoes of various patterns and shapes, several designs of Rakes, including the company's Solid Steel Bow Rake, Forks, Hoes, Snaths, Cradles, Handles, &c. The effect of the exhibit is both striking and pleasing owing to the contrast produced by the polished steel goods against the background of black velvet. In connection with this exhibit a glass case is shown containing samples of the product of Geo. A. McKeel & Co., of Jackson, Mich., an allied concern, manufacturing Ferrules, Caps, Felloe Plates and specialties in Drawn Sheet Metal.

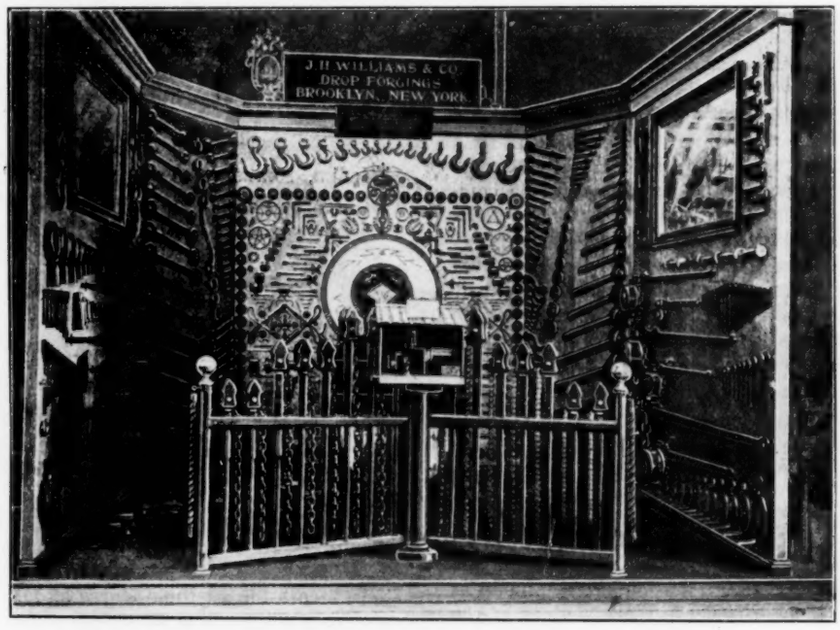
F. E. MYERS & BRO.'S BUFFALO EXHIBIT.

F. E. Myers and Bro., Ashland, Ohio, make a fine exhibit of Pumps, Hay Tools and Barn Door Hangers in the Stadium at the Pan-American Exposition. This exhibit is in charge of H. H. Homan, as well as that of the Bucher & Gibbs Plow Company, which adjoins it. The exhibit of Myers & Bro. is quite extensive, covering a great deal of space. The leading feature is a continuously revolving metal frame 16 feet high, having projecting arms, on which all styles of the firm's Pumps, comprising Force and Lift Pumps, Three-Way Wind Mill Pumps, Power Pumps, &c., are shown. On the floor a Power Pump is displayed in operation. Racks formed of wrought pipe are used to exhibit Hay Tools, Forks, Pulleys and Slings. Attached to the wall in the rear of the space are specimens of the Myers Stayon Barn Door Hanger, which is rapidly developing into one of the firm's most popular lines. A large line of Spray Pumps is also shown. The exhibit is rendered attractive in appearance by the bright colors used. Some of the Pumps are finished in aluminum, some in green, some in bright red, &c. The racks are all of aluminum finish.

F. E. Myers & Bro.'s Buffalo Exhibit.

J. H. WILLIAMS & CO.'S BUFFALO EXHIBIT.

The exhibit of J. H. Williams & Co., Brooklyn, N. Y., at the Pan-American Exposition is located in the Machinery Building, section 35. The space, which is 12 feet square, is inclosed on three sides by handsome boards made of bird's-eye maple, upon which are displayed samples of their Drop Forged Engineers' and Machinists' Wrenches, Lathe Dogs, Eye Bolts, Machine Handles, Crank Handles, Tool Post Forgings, and specimens of various Forgings which they carry in stock for gas engines, automobiles, &c. In the foreground is a fence made of the well-known Vulcan Chain Pipe Wrenches, which are also exhibited elsewhere in the various sizes and with cable and flat link chain. The larger part of the board at the back of the exhibit is covered by specimens of Forgings which they have made to special order, including parts of guns, sewing machines, machine tools, surgical instruments, bicycles, automobiles, &c. There are also samples of a number of lines recently taken up as stock goods, which have not appeared in any catalogue up to the present time or been shown at any other exposition. Among them



J. H. Williams & Co.'s Buffalo Exhibit.

is a full line of Drop Forged Wire Rope Sockets, which are said to be the first forgings of the kind to be made without welds, by reason of which, it is stated, they test much better than the sockets which have been commonly used up to the present time.

PETERS CARTRIDGE COMPANY AT THE PAN-AMERICAN EXPOSITION.

The Peters Cartridge Company, Cincinnati, Ohio, make a very interesting exhibit in the East Ordnance Building. It is an instructive demonstration of the superiority of American ammunition for the rifle, revolver and gun. The exhibit consists of the products of the company and reproductions of wonderful targets made in important shooting contests. The products of the company are arranged around two columns, one on the

Peters Cartridge Company at the Pan-American Exposition.

right and the other on the left of the exhibit. The arrangement is such that the columns appear to be composed of Cartridges. Two revolving drums are fitted with transparencies giving reproductions of targets. These drums are revolved by hand, so that any one interested can study the targets shown. An exceedingly striking part of the exhibit is a large display, 4 feet in hight by 9 feet 6 inches in length, resting upon artistic cabinet work. This display is illuminated and consists of a series of tablets containing figures and illustrations. At the right in this display is a tablet describing some of the most recent victories with Peters Cartridges and King's Semi-Smokeless Powder. At the left is a similar tablet describing the products of the company. Five of the spaces in this illuminated display are occupied by figures in the different classes of shooting, which are in colors similar to cathedral windows. The top of the display shows two remarkable targets made by winners at meetings in 1900. In the center are reproductions of the winning targets shot in the indoor rifle match for the championship of the United States in March of the present year. Other targets are shown which are scarcely less interesting on account of their accuracy and the circumstances under which the shots were made. All the scores shown were made with Peters Cartridges and King's Semi-Smokeless Powder.

C. E. Hayter, manager of T. E. Hayter & Co.'s business, Artesian, S. D., has bought out Mr. Hayter's interest, and will continue the business under the style of C. E. Hayter & Co. Trade is referred to as so good as to make an enlargement of building necessary.

TRADE ITEMS.

THE works of Henry Disston & Sons, Incorporated, Philadelphia, are at this time fuller of work than they have ever been since the business was started. The great and costly extensions and improvements made during the past two or three years are still inadequate for meeting their requirements although they are running to full capacity with upward of 2600 names on the pay roll. Samuel Disston states that he considers the outlook for business brighter than at any time since he has been connected with the Saw and Tool trade.

NEGOTIATIONS are in progress for the consolidation of the Collier Shovel & Stamping Company of Washington, Ind., with the Chicago Steel Mfg. Company of Hammond, Ind.

THE AMERICAN LAWN MOWER COMPANY are remodeling the old Common Sense Engine Works, at Muncie, Ind., for the manufacture of Lawn Mowers and School Furniture. The company are adding to the plant a brick building, 70 x 132 feet. The American Lawn Mower has hitherto been manufactured at Richmond, Ind. The company removed to Muncie to secure greater facilities.

WADSWORTH-HOWLAND COMPANY, Indiana avenue and Thirteenth street, Chicago, have been awarded a bronze medal for their Paint exhibit at the Toronto Industrial Exhibition. This recognition is received by them with much gratification, in view of the fact that many brands of American Paint are now being sold in the Canadian market and one American manufacturer has a factory in the Dominion, besides which there are several large Canadian manufacturers of Paints. It is understood that no medal awarded by this exposition takes precedence over the bronze medal.

A. LESCHEN & SONS ROPE COMPANY of St. Louis, Mo., have issued a neat and attractive desk blotter. The top sheet is made of celluloid with an appropriate illustration of the Hercules Wire Rope, a full line of which for all purposes is manufactured by the company.

WARNER & RUCKER, 88 Chambers street, New York, representatives in this city of the Rogers Screw Company, Providence, R. I., are now carrying a complete stock of Screws manufactured by that company aggregating many thousand gross, in Iron, Bright and Blued and Brass Screws, all in both flat and round heads, for the accommodation of the nearby trade and for hurry orders, large orders going direct from the factory.

MILLER, SEARS & WALLING, formerly at 20 Reade street, New York, have taken the entire floor lately occupied by the Kearney & Foot Company, at 100-102 Reade street, New York, owing to the increased demands of their business. They are now the New York headquarters for the Kearney & Foot Files, manufactured by the Nicholson File Company, for which they have a joint agency in this territory, carrying a stock for quick deliveries. They also canvass the trade in the States of New York, Connecticut and New Jersey for the Lawn Mowers made by the Dille & McGuire Mfg. Company, Richmond, Ind., which they likewise carry in stock. This firm are also wholesale dealers of a general line of Hardware.

As announced in our last issue, Coates Clipper Mfg. Company, Worcester, Mass., have appointed John H. Graham & Co., 113 Chambers street, New York, general selling agents for all their Horse and Barbers' Clippers. The agents will receive all orders and make quotations. Goods will be billed by the Coates Clipper Mfg. Company, to whom all remittances should be made. Every effort will be made to maintain the high standard of excellence of these goods, which have been on the market for a quarter of a century.

THE September dinner of the New England Iron and Hardware Association, which was to have been held at the Point Shirley Club, Boston Harbor, on September 17, has been indefinitely postponed owing to the death of President McKinley.

LALANCE & GROSJEAN MFG. COMPANY.

THE great growth in the business of the Lalance & Grosjean Mfg. Company, New York, during the past year or two has compelled the management to enlarge their staff at the main offices, 19-21 Cliff street, New York. James D. Fleming, who has been identified with the company a long time and for six years manager of the Chicago branch, has been transferred to New York, the vacancy thus caused being filled by Palmer W. Holmes, one of their most efficient salesmen, who for years has covered the territory west of Chicago.

The great factory at Woodhaven, L. I., and rolling mills at Harrisburg, Pa., have been running full force through the summer, and the volume of orders now on their books insures a constant operation of both plants through the coming winter. The growth of their business is already crowding the large additions made to the Woodhaven works early last year, and they are now erecting a large warehouse on a piece of adjoining property. About 2100 people are employed at the Woodhaven plant.

The litigation between this company and the National Enameling & Stamping Company has ceased, the differences having been adjusted to the satisfaction of all concerned.

RUSSELL, BURDSALL & WARD BOLT & NUT COMPANY'S CATALOGUE.

RUSSELL, BURDSALL & WARD BOLT & NUT COMPANY, Port Chester, N. Y., have just issued a handsomely printed illustrated catalogue (126 pages) of Bolts, Nuts, Rivets, Screws, Stove Rods, Turnbuckles and Washers. A great variety of the several classes is shown, especially of Bolts, Nuts and Screws. This company are the successors of Russell, Burdsall & Ward, established 55 years ago, and the Port Chester Bolt & Nut Company, whose existence measures a third of the time. Extensive additions are being made to their plant.

PRICE-LISTS, CIRCULARS, &c.

THE IOWA FARMING TOOL COMPANY, Fort Madison, Iowa: The company have issued a finely printed catalogue of 129 pages for the season of 1902. It illustrates with list prices their full line of Wood Goods, Scythes, Snaths, Cradles and Steel Goods, Forks, Hoes, &c., to the superior quality and finish of which they call attention. They also refer to their splendidly equipped plant as having been in continuous operation for more than 47 years.

THE AVERY STAMPING COMPANY, Cleveland, Ohio: Set of three blotters calling attention to the merits possessed by their Never Break Solid Steel Sled Skates, and Never Break Cooking Utensils. They will be pleased to send the blotters to any dealer applying for them.

S. A. SLAYMAKER, Lancaster, Pa., John H. Graham & Co., agents, 113 Chambers street, New York: Illustrated and descriptive catalogue of Padlocks, Bicycle Locks, Dog Collar Locks, Night Latches, Railroad Locks and Car Hardware. They call special attention to their new Pressed Steel and Brass Padlocks, and to new types of Night Latches.

FAN LAWN SPRINKLER COMPANY, Chicago and San Francisco: Mail card calling attention to the merits of their Fan Lawn Sprinkler and Fan Lawn Rake.

BINDLEY HARDWARE COMPANY, Pittsburgh, Pa.: Their forty-second semiannual catalogue, in which they have aimed to illustrate such goods as are in demand during the fall and winter season.

EDWARD C. BECKMANN, 715 North Fourth street, St. Louis, Mo.: Price-list of Leather Aprons for blacksmiths, lumbermen, &c., complete with brass eyelets and leather strings.

S. ROEBUCK, 172 Fulton street, New York: Illustrated price-list of Roebuck's patent Water Proof Cemented Wood and Rubber Weather Strips.

C. E. JENNINGS & Co., 101 Reade street, New York: Four extra pages for recent catalogue, illustrating and describing Nos. 101, 102, 103 and 104 Tool Cabinets complete with Tools.

THE COLUMBIAN HARDWARE COMPANY.

THE COLUMBIAN HARDWARE COMPANY, Cleveland, Ohio, successors to the plant, patterns and good will of the Van Wagoner & Williams Hardware Company, have issued an artistic circular calling attention to the fact that about the middle of last March they took possession of the premises of their predecessors. Since then their energies have been occupied with putting in order useful machinery, selling old machinery and ordering new machinery to complete their plant. Supplies have been accumulated, the best mediums selected and they are now working to advantage. A number of new articles will soon be announced. A new catalogue is in preparation which will be gotten out in sections describing the goods of each department separately.

AMONG THE HARDWARE TRADE.

A. F. Schofield has succeeded Schofield & Co. in the Hardware, Farm Implement, Buggy and Harness business in Collinsville, Ind. Ter.

About October 20 the Pelham Hardware & Supply Company, Pelham, Ga., will embark in business in Pelham, Ga. Lee Hanks of Pelham is president of the company and will look after their management. The new concern will carry a full line of general Hardware, Stoves and Agricultural Implements.

Shawnee Hardware Company, Shawnee, O. T., have incorporated their wholesale and retail Hardware, Stove, Agricultural Implement and Sporting Goods business with a capital stock of $20,000. The company state that they now occupy four times the floor space they did at the beginning of the year.

C. W. Simon has lately purchased the Hardware, Stove and Sporting Goods business formerly conducted by F. E. Tackley, Pawnee City, Neb.

Hughes Bros. have recently commenced business in Rexburg, Idaho, handling Shelf Hardware, Tinware, Stoves, Sporting Goods, Furniture, &c.

H. T. Best has admitted a partner in his Hardware business in Libby, Mont., and the style of the concern is now Best & Thompson. A branch has lately been opened at Jennings, Mont.

C. E. Redfield & Son are successors to Irvin Underwood, Ruthven, Iowa, dealer in Shelf Hardware, Stoves, Tinware, &c.

R. L. Wupperman has bought the interest of his partner in the Hardware firm of Wupperman & Suchart, Sequin, Texas, and will continue the wholesale and retail business in Shelf Hardware, Stoves and Tinware, Sporting Goods, &c., under his own name.

William Furbish has bought the Loree Hardware, Stove, Tinware and Sporting Goods stock at Marshalltown, Iowa. The new proprietor is adding largely to the stock thus acquired.

Smith & Waterman are successors to Wyman & Waterman in the Hardware, Stove, Farm Implement, Buggy and Wagon and Sporting Goods business in Grant, Iowa. A 20-foot addition to their storeroom has recently been built.

Edward F. Cords has lately purchased the Hardware and Stove business of T. M. & W. W. Davidson, Elkader, Iowa. The new proprietor has added to the stock thus acquired.

Litchfield & Frazer, Lone Oak, Texas, have been succeeded by Litchfield & Cole, who will continue the Hardware, Stove and Agricultural Implement business at the old stand.

Gray & Magner have succeeded E. F. Towsley in the Shelf Hardware business in Silver Creek, Neb.

Goff & Daggett have bought the Hardware, Stove, Plumbing and Heating business formerly conducted by Levasseur Bros, Massena, N. Y.

Scott Bros., Harris, Mo., have disposed of their Hardware, Stove and Agricultural Implement stock to S. N. Garriott, who has removed it to Half Rock, Mo., where he is now in business.

The Wilke Glass Lined Refrigerator.

Star Chucks.

Millers Falls Company, Millers Falls, Mass., and 28 Warren street, New York, have improved the working qualities of their Star chucks, the former numbers, 1, 2 and 3, being superseded by Nos. 5, 6 and 7. The chuck has three steel jaws carefully adjusted in a socket to keep them in position, and so arranged as to open and close with the loosening or tightening of the chuck upon the spindle. The chucks are finely polished and nickeled. No. 5 holds from 0 to 3-16 inch, inclusive, and has a round shank 1½ inches long by ½ inch diameter. The scope of No. 6 is 0 to $^{17}/_{64}$ inch, with a round shank 3⅛ x $^{41}/_{64}$. No. 7 has a capacity of 0 to ½ inch, and shank 4½ x ⅞. No. 5 can be supplied with $^{41}/_{64}$ shank, No. 6 with ½ inch and No. 7 with ½ or $^{41}/_{64}$ shank, without additional charge. Special shanks, straight or taper, can be furnished to order at an additional cost.

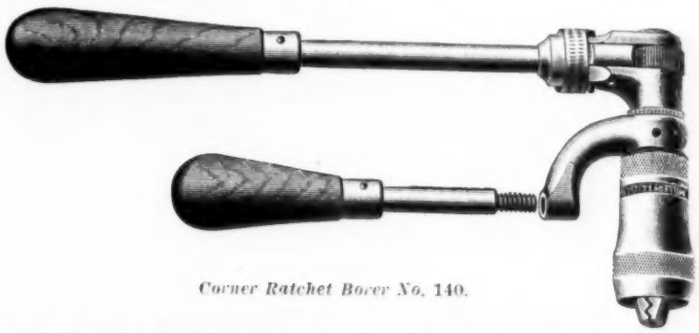
The Wilke Glass Lined Refrigerator.

The Wilke Mfg. Company, Anderson, Ind., have brought out refrigerators which are completely lined with glass, built with exteriors of porcelain or tile or of polished oak. An illustration is herewith given of one of the new refrigerators which conveys some impression of the attractiveness which the glass lining imparts. The glass used for the lining is regular plate glass ½ inch thick, taken as it comes from the kiln mouth, and is etched or opaqued by the refrigerator company. The color is a very light green, which is suggestive of cool cleanliness. The glass is assembled in forming the interior so that glass does not come in contact with glass, which would cause spalling or crumbling on the edge. A special cement is used for this purpose, which has been developed by the company after long experiment. The cement is non-odorous, water proof, antiseptic and hard settling, yet allows for the expansion and contraction due to varying temperatures. The entire top, bottom, sides, back, doors and front partitions are lined with glass in this way, so that no wood or metal is exposed to the action of the contents. The very smooth surface permits it to be easily cleaned. The provision shelves are coated with Purity cold water enamel of a brilliant white color. The company state that the glass lining is so strong that it will stand all reasonable use and some abuse. They have shipped several of these glass interiors long distances and thus far have not had a case of breakage in transit. They claim that the new refrigerator is the most sanitary as well as the most attractive refrigerator thus far brought out. Special attention has been given to insulation to secure economy in the consumption of ice. This line of refrigerators will be known as the Crystal line, will be furnished in all the usual sizes, and will be sold at the same prices as the company's tile lined refrigerators, which they will still continue to make. The glass lined models are an addition to their regular line.

Corner Ratchet Borer.

Millers Falls Company, Millers Falls, Mass., and 28 Warren street, New York, are marketing the corner ratchet borer, No. 140, of their manufacture, as here shown. It is intended for use by plumbers, electricians

and other mechanics in corners between joists and similar places inaccessible with ordinary tools. The long handle is 11½ inches in length between extremes, and measured the other way the chuck and ratchet is 5



Corner Ratchet Borer No. 140.

inches long over all. The tool is operated by the longer lever, while the shorter handle is used for steadying it. The teeth on the ratchet are cut very fine to permit of a short bite in operation. By means of the sleeve a ratchet either way or stationary tool is instantly produced. The chuck will hold square or round shank augers, drills, &c. The iron and steel work is polished and nickeled, and the goods are packed one in a box.

Tool Cabinets.

C. E. Jennings & Co., 101 Reade street, New York, manufacturers of fine, high grade mechanics' tools, have, in addition to their large line of tool chests, brought out a series of tool cabinets as here illustrated. The cabinets are paneled and made of both chestnut and quartered oak, according to their cost. Nos. 101, 102 and 103 cabinets, containing 36, 46 and 52 articles, are made of chestnut and well finished, the hight and breadth are respectively 26⅝ x 19⅜, 28⅞ x 24⅞ and 28⅞ x 24⅞ inches. No. 104, seen in Fig. 1, is made of paneled quartered oak, antique finished, and contains 52 tools, some of which are said to be the finest of their kind made, all the tools in all of the cabinets being suitable for professional or amateur use and all warranted. The latter cabinet is somewhat higher, 30⅞ x 24⅞ inches in dimensions, there being a uniform depth of 8 3-16 inches in all the cabinets. The cabinets afford a convenient place for tools, being arranged so as to hang against a wall or stand on bench, shelf or table. They are listed $18, $25, $35 and $50 each, and are packed singly in a case. Fig. 2 shows one of the cabinets closed.

Fig. 1.—*Paneled Quartered Oak Tool Cabinet No.* 104.

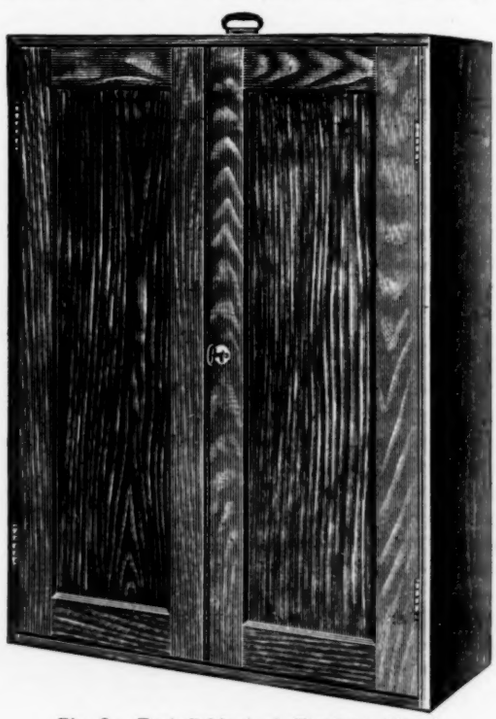


Fig. 2.—*Tool Cabinet of Chestnut, Closed.*

Herringbone Lath.

The International Metal Lath Company, Niles, Ohio, are offering metal lath, as herewith illustrated. The plain lath shown in Fig. 1 is designed for use on side walls, and the flat lath, Fig. 2, for ceilings. The following points of excellence are mentioned by the manufac-

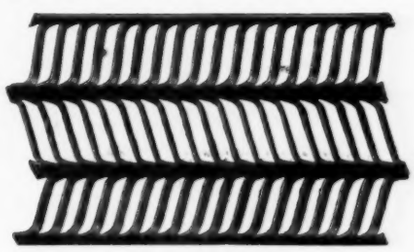


Fig. 1.—*Plain Herringbone Lath.*

turers: That the lath is extremely rigid; that it does not buckle, so that there is no time lost in stretching sheets before fastening; that the edges are uniform and even, necessitating no overlapping and consequent waste; that its application is comparatively cheap, be-

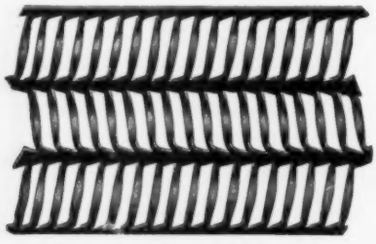


Fig. 2.—Flat Herringbone Lath.

cause of its uniform character, and that the lath is self furring, the ribs making it so. The lath is made in sheets 14 x 96 inches in size.

Safety Ladder Hook.

The Taplin Mfg. Company, New Britain, Conn., and 90 Chambers street, New York, have just put on the market the safety ladder hook, here illustrated full size. It is designed particularly for the use of painters, fruit pickers or any persons who need to suspend a can, pail

Safety Ladder Hook No. 0.

or similar vessel by means of a wire bale. It is made of spring wire, the ½-inch space between the parallel wires at the top being sufficient to allow it to be pushed either side of rung of ladder or limb of tree, when a quarter turn locks it instantly. The device for holding the bale is also such that the can is securely held and easily released with a quarter turn of the bale.

CONTENTS.

Current Hardware Prices.

REVISED SEPTEMBER 17, 1901.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓@33⅓&10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent discount.

Cut Prices.—*In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.*

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 4 1901), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, ₱ doz. $3.00....33⅓@33⅓&10%
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—

Ives' Patent.....25&5%
Taplin's Perfection.....50%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Eagle Anvils.....₱ ₺ 7¼@7¾¢
Hay-Budden, Wrought.....9@9¼¢
Horseshoe brand, Wrought.....9@9¼¢
Trenton, Wrought.....₱ ₺ 8¼@8¾¢

Imported—

Peter Wright's.....9¼@9¾¢

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....20%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Hull Bros. Co.:
Lots of 1 doz.....25%
Smaller Lots.....20%
Lots of 3 doz.....30%

Augers and Bits—

Com. Double Spur.....70@..%
Boring Machine Augers.....60¢10¢10@70¢10%
Car Bits, 12-in. twist.....60@60¢10%
Jennings' Pattern Auger Bits.....50¢10¢5@60%
Ford's Auger and Car Bits.....40&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list....40%
No. 30, R. Jennings' List.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits15&10@15&10&5%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Patter.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....50&10%
Snell's Car Bits, 12-in. twist.....60%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—

Standard List.....65@65&5%

Expansive Bits—

Clark's small, $1.8; large, $2.6.....50&10%
Lavigne's Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18.....50&10%
C. E. Jennings & Co., Steer's Pat.....33⅓&5
Swan's.....50%

Gimlet Bits—

Common Double Cut..gro. $2.25@2.75
German Pattern.....gro. $3.25@4.50

Hollow Augers—

Bonney Pattern, per doz. $11.00@11.50
Ames.....95&10%
New Patent.....95&10%
Universal.....20%
Wood's Universal.....25%

Ship Augers and Bits—

Ford's.....40%
Snell's.....40%
C. E. Jennings & Co.:
L'Hommedieu's.....15&10%
Watrous'.....40%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled.....gro. $2.75@3.10
Unhandled, Shouldered..gro.63@66c
Unhandled, Patent.....gro. 66@70¢
Peg Awls:
Unhandled, Patent....gro. 31@34c
Unhandled, Shouldered..gro.65@70c
Scratch Awls:
Handled, Common..gro. $3.50@4.00
Handled, Socket..gro. $11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

First Quality, best brands.$5.50@5.75
First Quality, other brands$5.25@5.50
Jobbers' Special Brands:
Good Quality.....$5.00@5.25
Best Quality.....$5.25@5.75
Cheap, Handled Axes.....$5.50@5.75
Beveled, add 25c doz.

Axle Grease—See *Grease, Axle.*

Axles—

Iron or Steel.
Concord, Loose Collar....4½@5c
Concord, Solid Collar....4¾@5¼c
No. 1 Common.....3¼@3¾c
No. 1½ Com. New Style..3¼@4c
No. 2, Solid Collar.....4¼@4½¢
Nos. 11 to 14.....70@70¢10%
Nos. 15 to 18.....75@75&10%
Nos. 19 to 22.....75@75¢10%

5% cash 10 days.

Boxes, Axle—

Common and Concord, not turned.. lb. 4¼@4½c
Common and Concord, turned.... lb. 4¾@5c
Half Patent.....lb. 8@9c

Balances—Sash—

Caldwell new list.....50%
Pullman's.....60%

Spring—

Spring Balances....50&10@50¢10¢5%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....80%
Peerless.....50%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb.. 2¾@3c

Beams, Scale—

Scale Beams, List Jan. 12, '81.30¢10%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters—Egg—

Standard Co.:
No. 5 Steel Handle Dover..₱ gro. $6.50
No. 10 Cast Handle Dover..₱ gro. $8.00
No. 10 Steel Handle Dover.₱ gro $8.00
No. 15 Extra Heavy Steel Handle. ₱ gro. $15.00
Rival, ₱ gro.....$14.00
Taplin Mfg. Co.: ₱ gro.
No. 50 Small Family size.....$6.50
No. 100 Regular Family size.....$8.00
No. 102 Regular Family size tinned.. $9.50
No. 150 Large Family size.....$15.00
No. 152 Large Family size, tinned.... $17.00
Lyon's, Standard size.....₱ doz. $1.75
Wonder (S. S. & Co.).....₱ gro. $7.50

Bellows—

Blacksmith, Standard List.70@70&10%
C. E. Jennings & Co., Blacksmith..60&10%
C. E. Jennings & Co., Hand.....33⅓&5

Blacksmiths—

Inch..	*30*	*32*	*34*	*36*	*38*	*40*
Each..	*$3.50*	*3.75*	*4.25*	*4.80*	*5.35*	*6.15*

Extra Length: Each..$4.00 4.55 5.10 5.60 6.40 7.50

Net Prices.

Molders—

Inch..	*9*	*10*	*11*	*12*	*14*	*16*
Doz...	*$6.75*	*7.25*	*8.50*	*9.50*	*12.00*	*14.50*

Hand—

Inch...	*6*	*7*	*8*	*9*	*10*	*12*
Doz....	*$3.75*	*4.25*	*4.50*	*5.00*	*5.7*	*6.75*

Bells—Cow—

Ordinary goods.....75¢5@75¢10%
High grade.....70@70¢10%
Jersey.....75&10%
Texas Star.....50%

Door—

Abbe's Gong.....45%
Barton Gong.....55%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's....40@40&10%
Yankee Gong.....55%

Hand—

Hand Bells, Polished.....60¢5@66⅔¢
White Metal.....55@55¢10%
Nickel Plated.....50@50¢10%
Swiss.....60@60¢7½%
Silver Chime.....33⅓@33⅓&10%

Miscellaneous—

Farm Bells.....lb. 2@2¼c
Steel Alloy Church and School..... 50¢10¢5@60%
National Bell Foundry Co.:
Superior Cast Steel Church and School Bells.....50&10&5@60%
Wilmot & Hobbs Mfg. Co., Gongs.....70%

Belting—Rubber—

Agricultural (Low Grade).75¢10@80%
Common Standard.....75@75¢10%
Standard.....70@70¢10%
Extra.....60¢10¢5%
High Grade.....50¢10@50¢10¢5%
Boston Belting Co.:
Seamless Stitched, Imperial.....45&5%
Boston.....50&5%
Niagara.....60&5%

Leather—

Extra Heavy, Short Lap...50¢10@60%
Regular Short Lap 60¢10@60¢10¢5%
Standard.....60¢10¢10@70¢5%
Light Standard.....70@70¢10%

Cotton—

Rossendale-Reddaway B. & H. Co.:
Sphinx Brand.....60&10%
Durable Brand.....70%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters.... 40@50%

Bicycle Goods—

John S. Leng's Son's 1899 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—Tackle—

Common Wooden.....70¢5@70¢10%
Cleveland's Steel.....60&10@70%
Ford's Star Brand Self Lubricating.... 60&10%
Hollow Steel, Ford's Pat. Star Brand.... 50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50&10%
See also *Machines, Hoisting.*

Boards Stove—

Zinc, Crystal, &c.....40¢10@..%

Bolts—

Carriage, Machine &c.—

Common, list Jan. 30, '95.. .65&5@..%
Norway Iron, $3.00, list Oct. 7, '84..
Philа. Eagle, $3.00 list May 24, '99.... 80@80¢5%
Bolt Ends, list Jan. 30, '95.70¢7½@..%
Machine, list Oct. 1, '99.....70¢5@..%
Machine with C. & T. Nuts..... 65¢10@..%

NOTE—*The rapid advances in manufacturers' prices enable the jobbers to cut prices freely.*

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz...	*$0.26*	*.30*	*.39*	*.47*	*.65*

Cast Iron Spring Foot:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.25*	*1.75*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.75*	*1.05*	*1.30*

Cast Iron Shutter, Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.57*	*.80*	*1.00*

Wrought Barrel Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz...	*$0.44*	*.50*	*.61*	*.70*	*1.23*

Wrought Barrel .....70¢10@75&5%
Wrought " Bronzed.40¢5@50¢10%
Wrought Flush, B. K..50¢10@60¢10%
Wrought Shutter...40¢10¢10@60¢5%
Wrought Square Neck.....50@50&10%
Wrought Sunk.....50@50¢10%
Ives' Patent Door.....60%

Stove and Plow—

Plow.....60¢10@..%
Stove.....77½%

Tire—

Common.....77½%
Norway Iron.....80@80¢5%
American Screw Company:
Norway Philа., list Oct. 16, '84....82½%
Eagle Philа., list Oct. 16, '84.....85%
Bay State, list Dec. 28, '99.....77½%
Franklin Moore Co.:
Norway Philа., list Oct. 16, '84..82½%
Eagle Philа., list Oct. 16, '84.....85%
Eclipse, list Dec. 28, '99.....77½%
Port Chester Bolt & Nut Company
Empire, list Dec. 28, '99.....77½%
Keystone Philа. list Oct. '84.....85%
Norway Philа., list Oct. '84.....82½%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch.....	*1¼*	*1¼*	*1¾*	*2*
Per doz...	*$4.80*	*5.00*	*5.75*	*7.25*

Inch	*2¼*	*2¾*
Per Doz.....	*$8.65*	*11.50*

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25c

Boring Machines—*See Machines, Boring.*

Boxes, Mitre—

C. E. Jennings & Co.....50c
Seavey's, per doz., $30.....40c

Braces—

NOTE—*Most Braces are sold at net prices.*

Common Ball, American...$1.15@1.35
Barber's.....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 128, 207 to 414.....60%
C. E. Jennings & Co.....50&10%
Mayhew's Ratchet.....50%
Mayhew's Quick Action Hay Patent..50%
P., S. & W. Co Peck's Patent..... 60&10@65&5%

Brackets—

Wrought Steel.....75¢5@75¢10%
Bradley's Wire Shelf:
Full cases.....90%
Broken cases.....75&10%
Griffin's Pressed Steel.....75%
Griffin's Folding Brackets.....70&10%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—

Wire Goods Co.....75%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—

Boss.....₱ gro. $48.00
Hoosier.....₱ gro. $36.00

Bull Rings—See *Rings, Bull.*

Butts—Brass—

Wrought list Sept., '96.....40@40¢5%
Cast Brass, Tiebout's.....50%

Cast Iron—

Fast Joint, Broad.....60@50¢10%
Fast Joint, Narrow.....60@50¢10%
Loose Joint.....70¢5@70¢10%
Loose Pin.....70¢5@70¢10%
Loose Pin.....70¢5@70¢10%
Mayer's Hinges.....70¢5@70¢10%
Parliament Butts.....70¢5@70¢10%

Wrought Steel—

Table and Back Flaps...60¢10%
Narrow and Broad.....60¢10%
Inside Blind.....66⅔%
Loose Pin.....70¢10%
Loose Pin, Ball and Steeple Tip.....70¢10%
Japanned, Ball Tip Butts...60%
Bronzed Wrt. Nar. and Inside Blind Butts.....45%

Extra 5% off.

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....40&10%
Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong.....per lb..3¼@4c
Sharp, 1 prong.....per lb... 4@4½c
Perkins' Blunt Toe.....₱ ₺ 3½@
Perkins' Sharp Toe.....₱ ₺ 4 @

Can Openers—See *Openers, Can*

Cans, Milk—

	5	8	10 gal.	
Illinois Pattern.	$1 75	2.10	2.35	each.
Iowa Pattern....	....	2.40	2.60	each.
Buffalo Pattern.	....	2.30	2.50	each.
	20	30	40	qts.
New York Patt'rn	3.00	3.25	3.40	each.
Baltimore Patt'rn	2.50	2.85	3.10	each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$48.00	60.00	108 gro

Caps—Percussion—

Eley's E. B.....60c
G. D.....per M 33@35c
F. L.....per M 37@40c
G. E.....per M 47@50c
Musket.....per M 57@60c

Primers—

Berdan Primers, $1.00.....5%
B. L Caps (Sturtevant Shells) *$1.00.....5%*
All other primers.....$1.10@$1.15

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges—

Blank Cartridges:
32 C. F., $5.50 ..... 10c&5@10c&10%
38 C. F., $7 00 ..... 10c&5@10c&10%
22 cal. Rim, $1,50 ..... 10c&5@10c&10%
32 cal. Rim, $2.75 ..... 10&5@10c&10%
B. B. Caps, Con., Ball Swgd. $1 80@1.85
B. B. Caps, Round Ball... $1.10@1.15
Central Fire ..... 25@25c&5%
Pistol and Rifle ..... 15c&5@15c&10%
Primed Shells and Bullets .....
15c&5@15c&10%
Rim Fire Sporting ..... 50@50c&5%
Rim Fire, Military .... 15c&5@15c&10%

Casters—

Bed ..... 70@70c&10%
Plate ..... 75@75c&10%
Philadelphia ..... 75@75c&10%
Boss ..... 70&10%
Boss Anti-Friction ..... 70&10%
Martin's Patent (Phœnix) 45%
Payson's Anti-Friction .... 70&10&10%
Standard Ball Bearing 45%
Tucker's Patent, low list 30%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Coil—

NOTE.—*The following prices are f. o. b. Pittsburgh. Manufacturers in quoting usually add freight to destination.*

American Coil. Cask lots:

3-16	¼	5-16	⅜	7-16	½	9-16
7.75	5.50	4.85	4.00	3.85	3.75	3.55
⅝	¾ to 1 in.			1¼ to 1¾ inch.		
3.55	3.50 per lb.			3.75 per 100 lb.		

Less than Cask lots add 25c.
German Coil, list July 24, '97. 60&10c&10c&10%

Halters and Ties—

Halter Chains ..... 60c&10%
German Halter Chain, list July 24, '97 ..... 60c&10c&10%
Cow Ties 60%

Trace, Wagon, &c.—

Traces, Western Standard: 100 pair
6½—6-3, Straight, with ring...$30.00
6½—6-2, Straight, with ring.. $31.00
6½—8-2, Straight, with ring.. $35.00
6½—10-2, Straight, with ring..$38.00
Add 2¢ per pair for Hooks.
Twist Traces 2¢ per pair higher than Straight Link.
Trace, Wagon and Fancy Chains..
50c&10@50c&10c&5%

Miscellaneous—

Jack Chain, list July 10, '98:
Iron ..... 60@60c&10%
Brass ..... 60@60c&10%
Safety Chain ..... 70&5@70c&10%
Gal. Pump Chain ..... lb. 4½@4½c
Covert Mfg. Co.:
Breast ..... 35&2%
Halter ..... 35&2%
Heel ..... 35&2%
Hein ..... 35&2%
Stallion ..... 35&2%
Covert Sad. Works:
Breast 70%
Halter 70%
Fold Back 70%
Hein 70%
Oneida Community:
Am. Coil and Halters ..... 50&10&5@60%
Am. Cow Ties ..... 35&5@40&5%
Eureka Coil and Halter ..... 60@60&5%
Niagara Coil and Halter ..... 60@60&5%
Niagara Cow Ties ..... 45&5@45&10&5%
Wire Goods Co.:
Dog Chain ..... 60&10%
Universal Dbl-Jointed Chain 50%

Chalk—(From Jobbers.)

Carpenters' Blue ..... gro. 42@45c
Carpenters', Red ..... gro. 37@40c
Carpenters', White ..... gro. 33@35c
See also Crayons.

Chalk Lines—See *Lines.*

Checks, Door—

Bardsley's ..... 40&10%
Columbia ..... 50&10%
Eclipse ..... 60@60&10%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools 55%
Youths' Chests, with Tools 40%
Gentlemens' Chests, with Tools 30%
Farmers', Carpenters', etc, Chests, with Tools 30%
Machinists' and Pipe Fitters' Chests, Empty 30%
C. E. Jennings & Co.'s Machinists' Tool Chests 20%

Chisels—

Socket Framing and Firmer

Standard List ..... 70c&5@70c&10%
Buck Bros 30%
Charles Buck 30%
C. E. Jennings & Co. Socket Firmer
No. 10 ..... 60&10%
C. E. Jennings & Co. Socket Framing
No. 15 ..... 60&10%
Swan's ..... 70&5%
L. & I. J. White ..... 30@30&5%

Tanged—

Tanged Firmers ..... 40c&5@40&10%
Buck Bros 30%
Charles Buck 30%
C. E. Jennings & Co. Nos. 191, 181.... 25%
L. & I. J. White, Tanged ..... 25&5%

Cold—

Cold Chisels, good quality..lb. 13@15c
Cold Chisels, fair quality..lb. 11@12c
Cold Chisels, ordinary ..... lb. 8@9c

Chucks—

Beach Pat., each $8.00 ..... 20%
Massey's Planer and Milling ..... 15@20%
Skinner Patent Chucks:
Combination Lathe Chucks 40%
Drill Chucks, Patent and Standard 30%
Drill Chucks, New Model ..... 2 %
Independent Lathe Chucks 40%
Improved Planer Chucks 25%
Universal Lathe Chucks 40%
Face Plate Jaws 40%
Standard Tool Co.:
Improved Drill Chuck 45%
Union Mfg. Co.:
Combination 40%
Cear Drill 30%
Geared Scroll 30%
Independent 40%
Union Drill 30%
Universal 40%
Face Plate Jaws 35%

Clamps—

Adjustable, Hammers' ..... 20@20&5%
Cabinet, Sargent's ..... 50&10%
Carriage Makers', P., S. & W. Co. 40&10%
Carriage Makers' Sargent's ..... 50&10%
Besly, Parallel ..... 33⅓&10%
Lineman's, Utica Drop Forge & Tool Co 40%
Saw Clamps, see *Vises, Saw Filers'.*

Cleaners Sidewalk—

Star Socket, All Steel ..... ₱ doz. $4.00 net
Star Shank, All Steel ..... ₱ doz. $3.75 net
W. & C. Shank, All steel, 7½ in. ₱ doz., $3.05; 8 in., $3.10; 8½ in., $3.25.

Cleavers, Butchers'—

Foster Bros 30%
New Haven Edge Tool Co.'s 40%
Fayette R. Plumb ..... 33⅓&10%
P., S & W ..... 50&5&5%
L. & I. J. White 25%

Clippers—

Chicago Flexible Shaft Company
Handy Toilet ..... ₱ doz. $7.20
Mascotte Toilet ..... ₱ doz. $3.40
Monitor Toilet ..... ₱ doz. $9.00
Stewart's Patent ..... ₱ doz. $10.00

Clips Axle—

Eagle and Superior ¼ and 5-16 inch ..... 70c&10%
Norway, ¼ and 5-16 inch..70@70c&10%

Cloth and Netting, Wire—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Compression and Plain Bibbs, 65c&5%
Globe, Kerosene, Racking, &c., Cocks ..... 65c&10%

Coffee Mills—See *Mills, Coffee.*

Collars Dog—

Brass, Pope & Stevens' list 40%
Embossed, Glit, Pope & Stevens' list 30&10%
Leather Pope & Stevens' list 40%

Compasses, Dividers, &c.

Ordinary Goods. ..... 70c&10@75%
Bemis & Call Hdw. & Tool Co.:
Dividers 65%
Calipers, Call's Patent Inside 55%
Calipers, Double 65%
Calipers, Inside or Outside 65%
Calipers, Wing 60%
Compasses 50%
J. Stevens A. & T. Co ..... 25&10%

Compressors Corn Shock—

J. B. Hughes' ₱ doz $2.50

Conductor Pipe, Galva.—

L. C. L. to Dealers:

Territory.	*Not nested.*	*Nested.*
Eastern	70c&2½%	70c&5%
Central	65c&10%	70%
Southern ..	65%	65c&2½%
S. Western.	60c&12½%	60c&15%

Terms, 2% for cash.
Jobbers receive extra 12½&2½ on carloads loose, and extra 12½ on carloads crated.
See also *Eave Troughs.*

Coolers, Water—

Nos....	3	4	6
Labrador	$11.50	$14.00	$17.50 $20.00
8 gal.	$24.00		
Nos	3	4	6 8
Iceland..	$23.00	$25.00	$30.00 $37.50
10	14 gal.		
$57.00	$72.00		

Coopers' Tools—

See *Tools, Coopers'.*

Cord— Sash—

Braided, Drab ..... lb. 25c
Braided, White, Common, lb 17½@18c
Cable Laid Italian..lb. A, 18c; B, 16c
Common India ..... lb 9 @9½c
Cotton Sash Cord, Twisted.....12@16c
Patent Russia ..... lb. 12½@13c
Cable Laid Fussia ..... lb. 13½@14c
India Hemp, Braided ..... lb 14@15c
India Hemp, Twisted ..... lb. 10@12c
Patent India, Twisted ..... lb. 10@12c
Pearl Braided, cotton ..... ₱ ᗺ 17@18¢
Massachusetts, White ..... ₱ ᗺ 22½¢
Massachusetts, Drab ..... ₱ ᗺ 26½¢
Eddystone Braided Cotton ..... ₱ ᗺ 19¢
Harmony Cable Laid Italian ..... ₱ ᗺ 18¢
Ossawan Mills:
Crown, Solid Braided White... ₱ ᗺ 22¢
Braided, Giant, White ..... ₱ ᗺ 20¢
Peerless:
Cable Laid Italian ..... 16¢
Cable Laid Russian ..... 14¢
Cable Laid India ..... 12¢
Braided India ..... 18¢
Phœnix, White ..... 19¢
Samson:
Braided, Drab Cotton ..... ₱ ᗺ 32½¢
Braided, Italian Hemp ..... ₱ ᗺ 32½¢
Braided, Linen ..... ₱ ᗺ 49¢
Braided, White Cotton, Spot. ₱ ᗺ 28½¢
Silver Lake:
A quality, Drab, 40¢ 15%
A quality, White, 35¢ 15%
B quality, Drab, 35¢ 15%
B quality, White, 30¢ 15%
Italian Hemp, 40¢ 15%
Linen, 57½¢ 15%

Wire, Pictures—

Braided or Twisted ..... 85@85c&10%
Note.—There is a good deal of confusion in lists, some using old list and others the new list.

Corn Knives and Cutters—See *Knives, Corn.*

Corn Planters—

See *Planters, Corn—*

Crackers, Nut—

Little Giant ..... ₱ gr. $34.00

Cradles—

Grain 50%

Crayons—

White Round Crayons, gross..5½@6c
Cases, 100 gro., $4.50, at factory.
D. M. Steward Mfg. Co.
Metal Workers' Crayons, gr. $2.50
Soapstone Pencils, round, flat or square ..... gr. $1.50
Rolling Mill Crayons..... gr. $2.50
Railroad Crayons (composition) gr. $2.00
Case lots 20%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks, Shepherds'—

Fort Madison, Heavy ..... ₱ doz. $7.00
Fort Madison, Light ..... ₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden ..... ₱ doz. $10.00

Cutlery, Table—

International Silver Company:
No. 12 Medium Knives, 1847, ₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor ..... ₱ doz $3.00
Wm. Rogers & Son ..... ₱ doz. $2.50
Simeon L. & Geo. H. Rogers Company:
12 dwt. Medium Knives ..... ₱ doz. $3.00
No. 77 Medium Knives ..... ₱ doz. $2.50

Cutters— Glass—

H. H. Mayhew Co 40%
Smith & Hemenway Co 50%

Meat—

Hale's..Nos. 11 & 111 12 & 112 13 & 113
Per doz .. $10.80 13 20 18.00

American					
Nos	1	2	3	4	5
Each	$5	$7	$10	$25	$50 $80

Connecticut					50%
No	20	40	60	8	10 12
each	$1.75	2.00	2.25	3.00	3.00 4.00

Enterprise				25@25&7½%
Nos	5	10	12	22 32
Each	$2	$3	$2.50	$4 $6

Dixon's, ₱ doz				30&10@40%
Nos	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Home No. 1, ₱ doz. $22.75				.50&10%
Little Giant, ₱ doz				33½&5@40%
Nos.	305	310	312	390 322
	$38.00	$48.00	$44.00	$72.00 $68.00

Sterling				33⅓&5%
Nos			1	2
Each			$5.00	$2.50

New Triumph No. 603, ₱ doz. $24.00 .. 30&10@40%
Woodruff's, ₱ doz ..... 30&10@40%

Nos	100	150
	$15.00	$18.00

Chadborn's Smoked Beef Cutter, ₱ doz. $60.00
Enterprise Beef Shavers ..... 25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw, Corn Grater, &c 40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9 ..... 55%
Kraut Cutters 36 x 12, 40 x 12 ..... 40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters 40%
Slaw Cutters, 1 Knife, ₱ gr. ..... $18@$20
Slaw Cutters, 2 Knife, ₱ gr. ..... $22@$38

Tobacco—

All Iron, Cheap ..... doz. $4.25@$4.50
Enterprise ..... 25@50%
National, ₱ doz. $21.00 ..... 40%
Sargent's, ₱ doz., No. 2 ..... 45&10%
Sargent's No 12 and 21 ..... 50&10%

Washer—

Appleton's, ₱ doz. $16.00 .... 50&10&10%
Bonney's 40%

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger...per doz. $9.00
Iwan's Improved Post Hole Auger.... 40%
Iwan's Perfection Post Hole Digger... ₱ doz. $9.00
Kohler's Universal ..... ₱ doz. $14.00
Kohler's Little Giant ..... ₱ doz. $14.00
Kohler's Hercules ..... ₱ doz. $12.00
Kohler's Invincible ..... ₱ doz. $10.00
Kohler's Rival ..... ₱ doz. $9.00
Kohler's Pioneer ..... ₱ doz. $9.00
Never-Break Post Hole Diggers, ₱ doz. $24.00 ..... 60%
Samson, ₱ doz. $34.00 ..... 25%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—

See *Checks, Door.*

Door Springs—

See *Springs, Door.*

Doors, Screen—

Porter's Plain, No. 6 ..... ₱ doz. $6.80
Porter's Ornamental, No. 70. ₱ doz. $10.00

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ₱ doz. $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—

See *Knives, Drawing.*

Drills and Drill Stocks—

Common Blacksmiths' Drill..each $1.50@$1.75
Blacksmiths' Self-feeding.....each $3.75@4.00
Breast, Millers Falls, each $3.00 .15&10%
Breast, P., S. & W ..... 40&40&5%
Goodell Automatic Drills..40&5@40&10%
Joshua Hendy's Automatic Drills Nos. 2 and 3 ..... 16%
Johnson's Drill Points ..... 25&1%
Ratchet, Curtis & Curtis 25%
Ratchet, Parker's 40%
Ratchet, Weston's ..... 20@25%
Ratchet, Whitney's, P., S. & W 50%
Whitney's Hand Drill, No. 1, $10.00.. Adjustable, No. 10, $12.00 ..... 33⅓&
Twist Drills—
Standard List ..... 60c&5@65c&5%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—

See *Pans, Dripping.*

Drivers, Screw—

Screw Driver Bits ...per doz. 45@70c
Balsey's Screw Holder and Driver, ₱ doz. 2½-inch, $6; 4-in., $7.50 6-in., $9 ..... 40%
Buck Bros 30%
Buck Bros' Screw Driver Bits 30%
Champion ..... 40&10%
Douglass Mfg. Co ..... 20@20&10%
Fray's Hol. Hdle Sets, No. 3, $12.00 50%
Gay's Double Action Ratchet 35%
Goodell's Automatic ..... 50&10&10@50&10&10&5%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 40&10%
New England Specialty Co ..... 50&10%
Sargent & Co.'s:
Nos. 1, 50, 55 and 60 ..... 50&10&10%
Nos. 20 and 40 ..... 65½&10%
Smith & Hemenway Co ..... 40&5%
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles ..... 60&10%
No. 86 ..... 70&10%
Swan's:
Nos. 65 to 68 ..... 50%
No. 40 ..... 40&10%
Nos. 25, 35 and 45 ..... 20&10&10%

Eave Trough Galvanized

Territory.	*L. C. L.*	
Eastern	75c&10%	Carloads extra 12½%
Central	75c&7½%	
Southern	70c&12½%	
S. Western	70c&10%	

Terms, 2% for cash.
See also *Conductor Pipe and Elbows.*

Egg Beaters—See *Beaters, Egg*

Egg Openers—

See *Openers, Egg.*

Elbows and Shoes—

Factory shipments ..... 60@60&10%
Perfect Elbows (S. S. & Co.) 40%

Emery, Turkish—

	4 to 5	5½ to 15	Flour
Kegs	lb. 5c	5½c	5½c
½ Kegs	lb. 5¼c	5¾c	5¾c
Kegs	lb 5c	6c	
10-lb cans, 10 in case	6½c	7c	6c
10-lb. cans less than 10	10c	10c	8c

NOTE.—*In lots 1 to 3 tons a discount of 10% is given.*

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—

See *Pins, Escutcheon.*

Extractors, Lemon Juice—See *Squeezers, Lemon.*

Fasteners, Blind—

Zimmerman's ..... 50&10%

Faucets—

Cork Lined ..... 70c&5@70c&10c&5%
Metallic Key, Leather Lined ..... 70@70c&10%
Red Cedar ..... 50@50c&5%
B. & L. B. Co.:
Lockport, Metal Plug, reduced list 60&5%
Star ..... 60@60&5%
Star, Metal Plug new list.... 40@40&5%
West's Lock, Open and Shut Key 50&10%
John Sommer's Peerless Tin Key.... 40%
John Sommer's Boss Tin Key 50%
John Sommer's Victor Metal Key. 50&10%
John Sommer's Duplex Metal Key.... 60%
John Sommer's Diamond Lock 40%
John Sommer's I. X. L. Cork Lined.. 50%
John Sommer's Reliable Cork Lined ..... 50&10%
John Sommer's Chicago Cork Lined.. 60%
John Sommer's O. K. Cork Lined..... 50%
John Sommer's No Brand, Cedar..... 50%
John Sommer's Perfection Cedar.... 40%
McKenna, Brass:
Burglar Proof, N. P 35%
Improved, ¼ and ⅜ inch 35%
Self Measuring:
Enterprise, ₱ doz. $30.00 ..... 40&10%
Lane's, ₱ doz. $36.00 ..... 40&10%
National Measuring, ₱ doz. $36.00... 40%

Felloe Plates—

See *Plates, Felloe.*

Files—Domestic—

List revised Nov. 1, 1899.
Best Brands ..... 70@75c&5%
Good Brands ..... 75c&10@75c&10c&10%
Fair Brands ..... 80@80c&10%
Second Quality ..... 80c&10@80c&25%

Imported—

Stubs' Tapers, Stubs' list, July 24, '97 ..... 25%

Fixtures, Grindstone—

Net Prices:

Inch....	15	17	19	21	24
Per doz.	$2.60	2.75	3.00	3 50	4.40

P., S. & W. Co ..... 50@50&5%
Reading Hardware Co 60%
Sargent's ..... 60&10&10%
Stowell's Giant Grindstone Hanger.... ₱ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy ..... 50&10&10%
Stowell's Grindstone Fixtures Light... 60&10%

Fodder Squeezers—

See *Compressors.*

Forks—

Sept. 1, 1900, list.
Grain or Barley Forks, 16 to 20 inches ..... 70c&5%
Hay, 2 tine 65%
Hay, 3 tine 66⅔%
Hay, 4 tine, Header and Barley Forks, 13 to 16 inches 66⅔%
Manure, 4 tine 70%
Manure, 5 and 6 tine 70%
Spading ..... 70c&5%
Iowa Dig-Eay Potato 65%
Victor, Hay 66⅔%
Victor, Manure 70%
Victor, Header ..... 60&30%
Champion, Hay 66⅔%
Champion, Manure 70%
Columbia, Hay ..... 66⅔&5%
Columbia, Manure 70%
Columbia, Spading 70%
Hawkeye Wood Barley 4 tine ₱ doz $5.00; 6 tine, $6.00.
W. & C. Potato Digger 65%
Acme Hay ..... 60&10&7½%
Acme Manure, 4 tine ..... 60&20&10%
Acme Manure, 6 tine ..... 66⅔&10&2%
Dakota Header ..... 65&15&5%
Jackson Steel Barley ..... 65&15&5%
Kansas Header 66⅔%
W. & C. Favorite Wood Parley 4 tine, ₱ doz., $5.00; 6 tine, $6.00
Plated.—See *Spoons.*

Frames— Saw—

Red, Polished and Varnished..doz. $1.15@$1.40
White ..... doz. 75@80c

Screens and Frames—

See *Screens.*

Freezers Ice Cream—

Qts...	2	3	4	6	8	10
Best.	$1.45	1.65	1.95	2.40	3.20	4.00
Good	$1 25	1.40	1.70	2.15	2.75	3.75
Fair	$1.00	1.10	1.30	1.75	2.30	2.90

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— Per 1000 Feet.

Hemp Fuse $2.60
Cotton Fuse 2.90
Single Taped Fuse 3.25
Double Taped Fuse 4.20
Triple Taped Fuse 5.00

Gates, Molasses and Oil—
Stebbins' ..... 80@80&10%

Gauges—
Marking, Mortise, &c. ..... *55&10@55&10@10%*
Barrett's Comb. Roller Gauge ..... ₱ doz. $6.75@7.25
Stanley R. & L. Co.'s Butt & Babbet Gauge ..... 30&10%
Wire, Brown & Sharpe's 25%
Wire, Morse's 25%
Wire P., S. & W. Co ..... 30@30&10%

Gimlets— Single Cut—
Nail, Metal, Assorted ..... *gro. $1.40@1.60*
Spike, Metal, Assorted ..... *gro. $2.80@3.25*
Nail, Wood Handled, Assorted. ..... *gro. $1.75@2.00*
Spike, Wood Handled, Assorted ..... *gro. $3.25@3.50*

Glass, American Window
Jobbers' List, Jan. 21, 1901.
Less than Carloads ..... *80&20%*
Carloads ..... *85&5%*
3000 Boxes *87%*

Glue—Liquid, Fish—
List A, Bottles or Cans, with Brush. ..... *37½@50%*
List B, Cans (¼ pts., pts., qts.). ..... *33⅓@48%*
List C, Cans (¼ gal., gal.) ..... *25@45%*
International Glue Co. (Martin's) ..... 40&10&5%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Common Grade ..... *gro. $5.00@6.00*
Dixon's Everlasting....10-₱ pails, ea. 80¢
Dixon's Everlasting, in bxs., ₱ doz. 1 ₱ $1.20; 2 ₱ $2.00
Snow Flake: 1 qt. cans, per doz. $2.00; 2 qt., $3.20; 1 gal. cans per doz. $6.00; 3 gal. $16.00; 5 gal. $24.00 } 20%

Grindstones—
Bicycle Grindstones, each ..... $2.50@3.00
Pike Mfg. Co.: Improved Family Grindstones, per inch, per doz. ... $2.00 } 33⅓%
Pike Mower Knife and Tool Grinder, each ..... $3.00 }
Velox Ball Bearing, mounted, Angle Iron Frames ..... each, $3.25

Guards, Snow—
Cleveland Wire Spring Co.:
Galv. Steel ₱ 1000 ..... $9.00
Copper ₱ 1000 ..... $18.00

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
gro.
Peg Patent, Leather Top ..... *$4.90@5.25*
Peg Patent, Plain Top ..... *$3.50@3.75*
Sewing, Brass Ferrule ..... *$1.50@1.60*
Saddlers', Brass Ferrule ..... *$1.35@1.45*
Peg, Common ..... *$1.25@1.35*
Brad, Common ..... *$1.50@1.75*

Halters and Ties—
Covert Mfg. Co.:
Web ..... 45&2%
Jute Rope ..... 45&2%
Sisal Rope ..... 30&2%
Covert's Saddlery Works:
Web and Leather Halters 70%
Jute and Manila Rope Halters 70%
Sisal Rope Halters ..... 60&20%
Jute, Manila and Cotton Rope Ties 70%
Sisal Rope Ties ..... 60&20%

Hammers—
Handled Hammers—
Heller's Machinists' ..... 50&50&5%
Heller's Farriers ..... 50&50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 ..... 40&10%
Peck, Stow & Wilcox ..... 50&10%
Fayette R. Plumb:
Plumb, A. E. Nail ..... 40&10&7½%
Engineers' and B. S. Hand. 60&10&2½%
Machinists' Hammers 60%
Riveting and Tinners' ..... 40&10&7½%
Sargent's C. S. New List 40%

Heavy Hammers and Sledges—
3 lb. and under ..... *lb. 45c* }
3 to 5 lb ..... *lb. 36c* } *80&10@80*
Over 5 lb ..... *lb. 30c* } *&10&10%*
Wilkinson's Smiths' ..... *9½c@10c lb.*

Handcuffs and Leg Irons
See *Police Goods.*

Handles—
Agricultural Tool Handles—
Axe, Pick, &c ..... *60@60&10%*
Hoe Rake, Fork, &c ..... *60@60&10%*
Shovel, &c., Wood D Handle ..... *50@50&5%*

Cross-Cut Saw Handles—
Atkins' ..... 40&5%
Champion ..... 45@45&10%
Disston's 50%

Mechanics' Tool Handles—
Auger, assorted ..... *gro. $2.30@2.50*
Brad Awl ..... *gro. $1.25@1.50*
Chisel Handles:
Apple Tanged Firmer, gro. ass'd. $2.25@2.35; large, $2.50@2.60.
Hickory Tanged Firmer, gro. ass'd. $1.75@2.20; large, $3.50@3.70.
Apple Socket Firmer, gro. ass'd, $1.70@1.85; large, $2.00@2.25
Hickory Socket Firmer, gro ass'd. $1.60 @ $1.75; large, $1.75 @ $2.00
Hickory Socket Framing, gro. ass'd. $2.50@2.75; large, $2.65@2.85
File, assorted ..... *gro. $1.60@1.15*
Hammer, Hatchet, Axe, &c *60%*
Hand Saw, Varnished, doz. 70@75c
Not Varnished ..... *55@60c*
Plane Handles:
Jack, doz. 25c; Jack Bolted ..... *55@60c*
Fore, doz. 35@38c; Fore, Bolted ..... *70@75c*
Nicholson Simplicity File Handle, ₱ gro. ..... $0.80@$1.50

Hangers—
Barn Door, New Pattern, Round Groove, Regular:

Inch	*3*	*4*	*5*	*6*	*8*
Doz	$0.35	1.20	1.50	1.90	2.30

Barn Door, New England Pattern, Check Back, Regular:

Inch	*3*	*4*	*5*	*6*
Doz	*$1.30*	*1.75*	*2.50*	*3.00*

Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin 25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door 50%
Elevator 40%
Railroad 55%
Cronk Hanger Co.:
Loose Axle 60%
Roller Bearing ..... 60&10%
Lane Bros.:
Parlor, Ball Bearing $4.00
Parlor, Standard $3.25
Parlor, New Model $2.75
Parlor New Champion $2.25
Barn Door, Standard ..... 60&10%
Covered ..... 50&10&10&5%
Special ..... 60&10%
Lawrence Bros.:
Advance 60%
Cleveland 70%
Crown 60%
New York 60%
Peerless ..... 60&10%
Sterling 60%
McKinney Mfg. Co.:
No. 1, Special, $15 ..... 60&10%
No. 2, Standard, $18 ..... 60&10%
Stowell Mfg. and Foundry Co.:
Acme Parlor Ball Bearing 40%
Atlas 60%
Badger Barn Door 50%
Baggage Car Door 50%
Climax Anti-Friction 50%
Elevator 40%
Express 50%
Interstate 60%
Lundy Parlor Door 50%
Magic 50%
Matchless 60%
Nansen ..... 60&10%
Railroad 50%
Street Car Door 50%
Steel, Nos. 800, 404, 500 ..... 40&15%
Stowell Parlor Door 50%
Wild West, Nos. 800, 404, 500 ..... 50%
Zenith for Wood Track 50%
Taylor & Boggis Foundry Co.:
Kidder's ..... 50&15&10&5%
Columbian Hdw. Co.:
American Trackless ..... 33⅓&10%
Wilcox Mfg. Co.:
Bike Roller Bearing ..... 60&10%
C. J. Roller Bearing ..... 60&10%
Cycle Ball Bearing 50%
Dwarf Ball Bearing 40%
Ives, Wood Track ..... 60&10%
L. T. Roller Bearing ..... 60&10&5%
New Era Roller Bearing ..... 50&10%
O. K. Roller Bearing ..... 60&10&5%
Prindle, Wood Track 60%
Richards' Wood Track 60%
Richards' Steel Track ..... 50&10%
Spencer Roller Bearing ..... 60&10%
Tandem Nos. 1 and 2 ..... 60%
Underwriters' Roller Bearing 40%
Wilcox Auditorium Ball Bearing 20%
Wilcox Barn Trolley No. 123 ..... 40%
Wilcox Fire Trolley, Roller Bearing 30%
Wilcox Le Roy Nolseless Ball Bearing 40%
Wilcox New Century ..... 50&10&10%
Wilcox Trolley Ball Bearing 40%

Extra 5@10% often given.

Harness Menders—See *Menders.*

Harness Snaps—See *Snaps.*

Hasps—
McKinney's Perfect Hasp ₱ doz 50%
Wrought Hasps, Staples, &c.—See *Wrought Goods.*

Hatchets—
Best Brands ..... *50@50&10%*
Cheaper Brands ..... *60@60&10%*
Note.—Net prices often made.

Hay and Straw Knives—See *Knives.*

Hinges—
Blind and Shutter Hinges—
Surface Gravity Locking Blind: (Victor; National; 1888 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No	*1*	*3*	*5*
Doz. pair	*$0.75*	*1.45*	*2.90*

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No	*1*	*1½*	*2*	*2½*
Doz. pair	*$0.60*	*.65*	*.52*	*.55*

Mortise Reversible Shutter, (Buffalo, &c.)

No	*1*	*1¼*	*2*
Doz. pair	*$0.65*	*.60*	*.55*

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50 ..... 10%
Parker ..... 70@75%
Reading's Gravity ..... 75&10%
Sargent's, Nos. 1, 3, 5, 11 & 13 ..... 70&10&70&20%
Stanley's Steel Gravity Blind Hinges, ₱ doz. sets, without screws, $0.80; with screws, $1.15.
Wrightsville H'dware Co.:
O. S., Lull & Porter ..... 80&2½%
Acme, Lull & Porter ..... 75&10%
Queen City Reversible ..... 75&10%
Stenger's Positive Locking, Nos. 1 & 3 ..... 70&10&5%
Shepard's Noiseless, Nos. 60, 65, 55 ..... 70&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5 ..... 75&7½%
1868, Old Pat'n, Nos. 1, 3 & 5 ..... 75&7½%
Tip Pat'n, Nos. 1, 3 & 5 ..... 75&7½%
Buffalo Gravity Locking, Nos. 1, 3 & 5 ..... 75&7½%
Shepard's Double Locking, Nos. 20 & 25 ..... 70&10%
Champion Gravity Locking, No. 75 ..... 75&7½%
Steamboat Gravity Locking, No 75%
Pioneer, Nos. 060, 45 & 5½ ..... 75&7½%
Empire, Nos. 101 & 103 ..... 70&7½%
W. H. Co.'s Mortise Gravity Locking, No. 2 ..... 60&10%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No	*1*	*2*	*3*
Hinges with Latches	*$1.30*	*1.90*	*2.65*
Hinges only	*$1.20*	*1.50*	*2.00*
Latches only	*.60*	*.60*	*.65*

New England:
With Latch ..... *doz* .... *@$1.55*
Without Latch .... *doz.* .... *@$1.25*
Reversible Self-Closing:
With Latch ..... *doz.* .... *@$1.80*
Without Latch ..... *doz.* .... *@$1.45*
Western:
With Latch ..... *doz. $1.40@1.75*
Without Latch ..... *doz. $0.95@1.10*
Wrightsville H'dware Co.:
Shepard's or Clark's, doz. sets,

No.	1	2	3
Hinges with Latches	$1.80	2.00	2.75
Hinges only	1.20	1.50	2.10
Latches only	.65	.65	.70

Spring Hinges—
Holdback, Cast Iron, gro. ..... *$7.00@7.25*
Non-Holdback, Cast Iron ..... *gro. $6.50@6.75*
J. Bardsley
Bardsley's Patent Checking 15%
Bommer Bros.:
Bommer Ball Bearing Floor Hinges 40%
Bommer Spring Hinges 40%
Chicago Spring Butt Co.:
Chicago 25%
Floor Hinge 50%
Garden City Engine House 25%
Keene's Saloon Door 25%
Triple End 50%
Hoffman Hinge & Foundry Co.:
No. 70 & 80 Holdback Detachable $8.50
Lawson Mfg. Co.:
Matchless 35%
Matchless Pivot 45%
Payson Mfg. Co.:
Oblique ..... 50&10%
Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₱ gr. $12.50
Ideal, No. 4 ..... ₱ gr. $9.00
New Idea No. 1 ..... ₱ gr. $9.00
New Idea, Double Acting 45%
Columbian Hdw. Co.:
Acme, Wrt. Steel 30%
Acme, Brass 20%
American 30%
Columbia, No. 14 ..... ₱ gr. $9.00
Columbia, No. 18 ..... ₱ gr. $25.00
Columbia, Adjustable 30%
Gem, new list 25%
Clover Leaf ..... ₱ gr. $12.50
Oxford new list 25%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list Mar. 15, 1901:
Light Strap Hinges *75%*
Heavy Strap Hinges *80%*
Light T Hinges *70%*
Heavy T Hinges *66⅔%*
Extra Heavy T Hinges ..... *75&10%* } *Extra 20@25%*
Hinge Hasps *60%*
Cor. Heavy Strap *80%*
Cor. Ex. Heavy T ..... *75&10%*
Screw Hook and Strap. 6 to 12 in ..... *lb. 5½c*
Screw Hook and Strap. 14 to 20 in ..... *lb. 5 c*
Screw Hook and Strap. 22 to 36 in ..... *lb. 2¾c*
Screw Hook and Eye:
¾ to 1 inch ..... *lb. 5 c*
⅝ inch ..... *lb. 6 c*
½ inch ..... *lb. 7 c*

Miscellaneous—
Hoffman's Steel Spring Butt Hinges ..... 40&10%
Hoffman's Offset Refrigerator Hinges ..... 40&10%

Hods, Coal—

	15 inch.	*16*	*17*	*18*
Galv. Open	*$2.70*	*3.00*	*3.30*	*3.60*
Jap. Open	*$2.10*	*2.40*	*2.70*	*3.00*
Galv. Fun'el	*$3.30*	*3.60*	*3.90*	*4.20*
Jap. Funnel	*$2.70*	*3.00*	*3.30*	*3.60*

₱ doz.

Hoes— Eye—
Scovil and Oval Pattern ..... *60c@5@60c@10c@5%*
Grub, list Feb. 23, 1899 ..... *70c@5@70c@10%*
D. & H. Scovil 35%

Handled—
Sept. 1, 1900, List:
Field and Garden ..... *75c@2%*
Ladies', Boys', Toy and Onion ..... *70c@10c@10%*
Street and Mortar ..... *75c@7½c@2%*
Cotton ..... *70c@10c@10c@5c@2%*
Planters' ..... *70c@30%*
Weeding *75%*
Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.
Ft. Madison Crucible Garden Hoe ..... 75&2%
Ft. Madison Crescent Cultivator Hoe, per doz. ..... 75&10&2%
Ft. Madison Mattock Hoes:
Regular Weight ..... ₱ doz. $4.50
Junior Size ..... ₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz. $4.80
Ft. Madison Dixie Tobacco Hoe.. 75&20%
Kretsinger's Cut Easy, per doz.... 75&2%
Warren Hoe 60%
W. & C. Ivanhoe ..... 75&2%
B. B. Cultivator Hoe ..... 75&10&2%
Acme Weeding ..... 75&10&2%
W. & C. Lightning Shuffle Hoe, ₱ doz. $4.85

Hog Rings and Ringers—See *Rings and Ringers.*

Hoisting Apparatus—See *Machines, Hoisting.*

Hollow Ware—See *Ware, Hollow.*

Holders— Bit—
Angular, ₱ doz. $24.00 ..... 45&10%

Door—
Empire 50%

File and Tool—
C. E. Jennings & Co. Model Tool Holders 33⅓%
Nicholson File Holders and File Handles 33⅓%

Hooks— Cast Iron—
Bird Cage, Reading 60%
Bird Cage, Sargent's List ..... 50&10@60%
Ceiling, Sargent's List ..... 40&10%
Clothes Line, Hoffman's ..... 40&10%
Clothes Line, Reading List ..... 65&10@65&10&10%
Clothes Line, Sargent's List 50&10@65&10%
Coat and Hat, Sargent's List ..... 45&10%
Clothes Line, Stowell's 70%
Coat and Hat, Stowell's 70%
Coat and Hat, Reading ..... 70@75%
Coat and Hat, Wrightsville ..... 65&10%
Harness, Reading List ..... 70&10@75%

Wire—
Belt *80%*
Wire C. & H. Hooks ..... *60c@10@60c@10c@5%*
Atlas, Coat and Hat:
Single Cases 45%
10 Case Lots ..... 45&10%
Czar Harness ..... 50&10&5%
Wire Coat and Hat:
Acme 60%
B. B 60%
V Brace, Chief and Czar 60%
Gem 60%
Bright Wire Goods—See *Wire.*

Wrought Iron—
Box, 6 in., per doz. $1.50; 8 in., $1.75; 10 in., $2.00.
Cotton ..... *doz. $1.05@1.25*
Wrought Staples, Hooks, &c.—See *Wrought Goods.*

Miscellaneous—
Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50
Grass ..... *Nos.* *1* *2* *3* *4*
Best *$1.50* *1.75* *2.00*
Common *$1.30* *1.50* *1.40* *1.60*
Potato and Manure *70%*
Whiffletree ..... *lb. 4½c*
Hooks and Eyes:
Brass ..... *60c@10c@10@70%*
Malleable Iron ..... *70c@5@70c@10%*
Covert Saddlery Works' Self Locking Gate and Door Hook 60%
Crown Picture ..... 50&10%
Bench Hooks—See *Bench Stops.*
Corn Hooks—See *Knives, Corn.*

Horse Nails—See *Nails, Horse*

Horseshoes—See *Shoes, Horse.*

Hose, Rubber—
Garden Hose, ¾-inch:

Competition	*ft.*	*4¼@ 4¾c*
3-ply Standard	*ft.*	*5 @ 6 c*
4-ply Standard	*ft.*	*8 @ 9 c*
3-ply extra	*ft.*	*9 @10 c*
4-ply extra	*ft.*	*11 @12 c*

Cotton Garden, ¾-in., coupled:

Low Grade	*ft.*	*6 @7 c*
Fair quality	*ft.*	*8 @9 c*

Irons— Sad—
From 4 to 10 ..... *lb 5@5½c*
B. B. Sad Irons ..... *lb. 5½@4c*
Chinese Laundry ..... *lb. 5@5½c*
Chinese Sad ..... *lb. 3½@3¾c*
Mrs. Potts', per set:

Nos.	*50*	*55*	*60*	*65*
	67@72c	*64@69c*	*77@82c*	*74@79c*

New England Pressing ..... *lb. 5½@5¾c*

Soldering—
Soldering Coppers, 1 & 1¼ lb., 21@23c.; 2 lb., 19 @ 21c
Covert Mfg. Co ..... 20&2%
Smith & Hemenway Co's Sets 70%

Pinking—
Pinking Irons ..... *doz. 50@60c*

Jack Screws—See *Screws.*

Jacks, Wagon—
Covert Mfg. Co., Steel ..... 45&2%
Covert's Saddlery Works':
Daisy ..... 60&10%
Victor ..... 60&10%
Lockport ..... 40@40&10%
Lane's Steel ..... 33⅓&5%

Kettles—
Brass, Spun, Plain ..... *20@25%*
Enameled and Cast Iron—See *Ware, Hollow.*

Knife Sharpeners—See *Sharpeners, Knife.*

Knives—
Butcher, Shoe, &c.—
Foster Bros.' Butcher, &c 80%
Hartzell Cutlery Co ..... 60&5%
Smith & Hemenway Co ..... 40&10%
Hay and Straw—See *Hay Knives.*

Corn—
Ft. Madison Cut-Easy, ₱ doz $3.25
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—
Standard List ..... *70&5@70c&10%*
Adjustable Handle 25%
Bradley's 35%
Cantelo's Folding ..... 50@50&5%
C. E. Jennings & Co. Nos. 45, 46.. 40&10%
Jennings & Griffin ..... 66⅔&5%
Swan's ..... 70&10&2½%
Watrous 25%
L. & I. J. White ..... 20&5@25%

Hay and Straw—
Lightning Pat'n...per doz. $6.25@6.50
Iwan's Sickle Edge ..... ₱ doz. $10.00
Iwan's Serrated ..... ₱ doz., $11.00
Lightning, (Genuine) ..... $6.25@6.50
Maine ..... ₱ doz, $8.50

Mincing—
Buffalo ..... ₱ gro. $15.00

Miscellaneous—
Farriers' ..... *doz. $2.00@3.00*
Woolenholm's ..... ₱ doz. $3.00@3.25

Knobs—
Base, 2¼-inch, Birch, or Maple, Rubber tip, gro ..... *$1.20@1.25*
Carriage, Jap, all sizes..gro. 30@35c
Door, Mineral ..... *doz. 60@65c*
Door, Por. Jap'd ..... *doz. 65@70c*
Door, Por. Nickel ..... *doz. $2.00@2.10*
Bardsley's Wood Door, Shutter, &c .. 15%
Picture, Sargent's ..... 60&10%

Ladders, Step—
Handy Ladder Works:

Length.	Extended Length. Feet.	Shipped Ready for Use. Feet.	Per doz.	Shipped K. D. Per doz.
4	7		$16.00	$14.00
5			19.50	17.00
6	11		24.50	21.00
7	13		29.50	25.00
8	15		34.00	29.00
9	17		39.00	32.00
10	19		43.00	35.00
11	21		46.50	40.00
12	23		51.00	45.00

Ladies— Melting—

L. & G. Mfg. Co. 25%
P., S. & W. 5%
Reading 5%
Sargent's ..... 40@40&10%

Lanterns— Tubular—

Regular Tubular ..... doz. $4.35@4.75
Side Lift Tubular ..... doz. $4.75@5.25
Square Lift Tubular ..... doz. $4.75@5.25
Other Styles ..... 40@10@40@10@5%

Bull's Eye Police—

No. 1, 2½ inch $3.60
No. 2, 3 inch $4.00

Latches, Thumb—

Roggin's Latches ..... doz. 30@33c

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Small ..... doz. 50c; *large*, 55c
Covert Mfg. Co. ..... 45&2%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Solid Grip, Payson Mfg. Co. 80%
R. & E. 45%

Lines—

Wire Clothes, Nos...	*18*	*19*	*20*
100 feet	$1.20	1.00	1.65
75 feet	$1.80	1.70	1.30

Ossawan Mills.
Crown Solid Braided Chalk ..... 33⅓&5%
Mason's, No. 0 to No. 5 ..... 33⅓%
Samson Cordage Works:
Solid Braided Chalk, No. 0 to 3 ..... 40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50
..... 30%
₩ gr. .....

Locks— Cabinet—

Cabinet Locks ..... 33⅓@33⅓&7½%

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]

Reading Hardware Co. 50%
R. & E. Mfg. Co. 50%
Sargent & Co. ..... 40@40&10%

Elevator—

Stowell's 40%

Padlocks—

Wrought Iron ..... 75@10@80%
R. & E. Mfg. Co. Wrt. Steel and Brass. 50%

Sash, &c.—

Fitch's:
Bronze and Brass 66⅔%
Iron 50%
Ives' Patent:
Bronze and Brass 62½%
Iron 25%
Wrought Bronze and Brass ..... 55&5%
Wrought Steel 80%
Payson's signal 80%
Reading ..... 60&10&10@70%

Machines— Boring—

Without Augers.

	Upright.	Angular.
Improved No. 3	$4.25	No. 1 $5.00
Improved No. 4	3.75	No. 2. 3.38
Improved No. 5	2.75	
Jennings'	2.50	3.00
Millers' Falls		5.75
Snell's, Rice's Pat.	2.50	2.75
Swan's, No. 500.. 5.10	No. 200	6.45

Hoisting—

Moore's Anti-Friction Differential Pulley Block 30%
Moore's Hand Hoist, with Lock Brake. 20%
Moore's Portable Pneumatic Hoist.... 25%

Ice Cutting—

Chandler's 15%

Washing—

Wayne American ..... ₩ doz. $28.00
Western Star, No. 2 ..... ₩ doz. 28.00
Western Star, No. 3 ..... ₩ doz 30.00
St. Louis, No. 41 ..... ₩ doz. 60.00

Mallets—

Hickory ..... 45&5@50%
Lignumvitæ ..... 45&5@50%
Tinners', Hickory and Applewood, doz. ..... 50@55c

Mats— Door—

Elastic Steel (W.G. Co.) 10%

Mattocks—

See *Picks and Mattocks.*

Meat Cutters—

See *Cutters, Meat.*

Milk Cans—See *Cans, Milk*

Mills— Coffee—

Enterprise Mfg. Co. ..... 25@30%
National, list Jan. 1, '94 ..... 30%
Parker's Columbia and Victor@
..... 50&10@60%
Parker's Box and Side ..... 50&10@60%
Swift, Lane Bros. 30%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Net prices are generally quoted.

Cheap ..... *all sizes, $1.80@2.10*
Good ..... *all sizes, $2.50@2.75*

	10	12	14	16-inch
High Grade	4.25	4.50	4.75	5.00

Continental ..... 60&10&5%
Great American ..... 70&5%
Great American Ball Bearing.. 60&10&5%
Quaker City ..... 70&5%
Pennsylvania ..... 60&10&5%
Pennsylvania Golf 50%
Pennsylvania Horse 50%
Pennsylvania Pony 45%
Philadelphia:
Styles M., S., C., K., T ..... 70&5%
Style A, all Steel ..... 65&10%
Style E, Low Wheel ..... 60&10%
Style E, High Wheel ..... 70&10&5%
Drexel and Gold Coin, low list.. 50&5%

Nails—

Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered. List July 20, 1899 ..... 35&10%
Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos.	6	7	8	9	10
A. C.	25¢	23¢	22¢	21¢	21¢ ....40&5%
Ausable	27¢	26¢	25¢	24¢	23¢ ..50&10%
Capewell	19¢	18¢	17¢	16¢	16¢ ....10&5%
C. B. K.	25¢	25¢	22¢	21¢	21¢ 40%
Champion	28¢	26¢	25¢	24¢	23¢ .....
					40&10&5%
Clinton	....19¢	17¢	16¢	15¢	14¢ ....
					30&10&5%
Maud S.	..25¢	23¢	22¢	21¢	21¢ 50%
Neponset	23¢	21¢	20¢	19¢	18¢ 40%
Putnam	..23¢	21¢	20¢	19¢	18¢ 33⅓%
Vulcan	...23¢	21¢	20¢	19¢	18¢ ..25&10%
American, Nos. 5 to 10					₩ ℔ ..... 9@9½¢

Jobbers' special brands... per lb. 8@9c

Picture

	1½	2	2½	3	3½ in.
Brass Head	.45	.60	.70	.95	1.00 gro.
Por. Head	..	1.10	1.10	1.10	.. gro.

Nippers, See *Pliers and Nippers.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—

Cold Punched	*Off*
Mfrs. or U. S. Standard.	*list.*
Hexagon, plain	$5.50
Square, plain	$5.10
Square, C. T. & R.	$5.50
Hexagon, C. T. & R.	$6.00
Hot Pressed:	
Mfrs., U. S. or Nar. Gauge Stan'd.	
Square Blank	$5.50
Hexagon Blank	$6.00
Square Tapped	$5.20
Hexagon Tapped	$5.90

Oakum—

Best or Government ..... *lb.* 6¼c
Navy ..... *lb.* 5 c
U. S. Navy ..... *lb.* 5¼c
Plumbers' Spun Oakum 8¾c
In carload lots ¼c lb. off f.o.b. New York.

Oil Axle—

Snow Flake:

1 pt. cans, per doz.	$3.00
1 qt. cans, per doz.	$4.80
1 gal. cans, per doz.	$15 00
5 gal. cans, per doz.	$66.00

} 33⅓&10%

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper ..... 40&10@50&5%
Tin or Steel ..... 60&10@65%
Zinc ..... 60&10@65%
Paragon:
Brass and Copper ..... 40&10%
Tin or Steel ..... 60&10%
Zinc ..... 60&10%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₩ doz. 20%
Malleable, Hammers' Old Pattern, same list ..... 50&10%
Wilmot & Hobbs Mfg. Co.:
Spring Bottom Cans ..... 70@70&10%
Railroad Oilers etc. ..... 60@60&10%

Openers—Can—

French ..... doz. 35c
Iron Handle ..... doz. 25@27c
Sprague, Iron Hdle., per doz 35@40c
Sardine Scissors... doz. $1.75@$3.00
Tip Top ..... per doz. $0.75
National, ₩ gro. ..... $1.75@$2.00
Stowell's ..... per doz. 35@45¢
Waldorf, ₩ gro. $8.65

Egg—

Nickel Plate ..... per doz., $2.25
Silver Plate ..... per doz., $3.50

Packing—

Asbestos Packing, Wick and Rope, 16½@18c lb.

Rubber—

Sheet, C. I. ..... 8@12%
Sheet, C. O. S. ..... 9@15%
Sheet, C. B. S. ..... 10@14%
Sheet, Pure Gum ..... 60@70%
Sheet, Red ..... 35@40%
Jenkins' Standard, ₩ ℔ 80¢ ....25@25&5%

Miscellaneous—

American Packing ..... 7@10c lb.
Cotton Packing ..... 13@14c lb.
Italian Packing ..... 9@12½c lb.
Jute ..... 3½@4c lb.
Russia Packing ..... 7@11c lb.

Palls— Creamery

S. S. & Co., with gauges.. No 1 $6.50; No. 2, $5.75 ₩ doz.

Galvanized—

Price per gro.

Quart	*10*	*12*	*14*
Water, Regular	18.00	21.00	24.00
Water, Heavy	24.00	27.00	30.00
Fire, Rd. Bottom	31.00	33.00	35.00
Well	27.00	29.00	31.00

Pans— Dripping—

Standard List ..... 60&5@60&10&5%

Fry—

Common Lipped:

No.	*1*	*2*	*3*	*4*	*5*
Per doz.	*$0.60*	*.75*	*.85*	*.95*	*1.15*

Roasting and Baking—

Regal, S. S. & Co., ₩ doz., Nos. 5, $4.50; 10 $5.00; 20 $5.50; 30, $6.00
Simplex, ₩ gro., No. 40 $30.00; 50, $34.50; 60 $39 00; 140, $33.00; 150, $37.50; 160, $43.00.

Paper—

Building Paper—

Asbestos:	*lb.*
Building Felt	3c
Mill Board, sheet, 40 x 40 inches	4c
Mill Board, roll, thicker than 1-16 inch	3c
Mill Board, roll, 1-16 in. thick or less	3c

	Per roll
Rosin Sized Sheathing:	*500 sq. ft.*
Light wt., 20 lbs. to roll	$0.32
Medium wt., 30 lbs. to roll	$0.47
Heavy wt., 40 lbs. to roll	$0.58
Medium Grades Water Proof Sheathing	$0.65@1.25
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton	$36.00@37.00
Red Rope Roofing, 250 sq. feet per roll	$1.65

Tarred Paper.

1 ply (roll 500 sq. ft.), ton ..$26 00@27.00
2 ply, roll 108 sq. ft. ..... 40@50c
3 ply, roll 108 sq. ft. ..... 60@70c
Slater's Felt (roll 500 sq. ft.) ..50@60c
R. R. M. Stone Surfaced roofing (roll 110 sq. ft.) $2.75

Sand and Emery—

List Dec. 23, 1899 ..50¢10@50¢10¢10%

Parers— Apple—

Advance ..... ₩ doz. $4.50
Baldwin ..... ₩ doz. $5.00
Bonanza ..... each $5.00
Dandy ..... each $7.50
Eureka, 1898 ..... each $16.00
Family Bay State ..... ₩ doz. $12.00
Hudson's Little Star ..... ₩ doz. $4.00
Hudson's Rocking Table.... ₩ doz $5.50
Improved Bay State ₩ doz. $27.00@30.00
New Lightning ..... ₩ doz. $5.50
Reading 72 ..... ₩ doz. $4.00
Reading 78 ..... ₩ doz. $7.00
Turn Table '98 ..... ₩ doz. $5.50
White Mountain ..... ₩ doz. $4.00

Potato—

Saratoga ..... ₩ doz. $5.50
White Mountain ..... ₩ doz. $4.50

Picks and Mattocks—

List Feb. 23, 1899....70¢10@70¢10¢5%

Pigeons— Clay

Markle's Black Birds, f.o.b. factory, per M $3.75
See also *Traps, Target.*

Pinking Irons—

See *Irons, Pinking.*

Pins— Escutcheon—

Brass 60%
Iron, list Nov. 11, '85 ..... 60%

Pipe, Cast Iron Soil—

Factory Shipments—Carload lots.
Standard, 2-6 in. ..... 65&5%
Extra Heavy, 2-6 in. ..... 70&10%
Fittings ..... 75&10&5%
NOTE.—*Freight allowed on Carload lots.*

Pipe, Merchant, Boiler Tubes, &c.—

Less than Carloads to Consumers.

Merchant Pipe.	*Black.*	*Galvanized*
⅛ to ⅜ inch	61%	48%
¼ to 10 inch	68½%	56%
Boiler Tubes.	*Up to*	*22 feet.*
Steel.		
1 to 1¼ inch and 2¾ to 5 inch inclusive		65½%
2 to 2½ inch, inclusive		60%
6 to 10 inches		69%
Iron.		
1 to 1½ inch and 2½ in.		45½%
1¾ to 2½ inch		43%
2¾ to 13 inch		53%

Casing, Cut Lengths.	*S. & S.*
2 to 8 inch	58½%
3¼ to 4½ inch	59%
4¾ to 12½ inch	61½%

NOTE.—*Prices are largely nominal owing to scarcity of Pipe. Jobbers are obtaining almost any price they ask.*

Pipe, Sewer—

Standard Pipe and Fittings, 2 to 24 in.
New England 70%
New York and New Jersey 73%
Ohio and Michigan 80%
Carload lots are generally delivered.

Planes and Plane Irons—Wood Planes—

Molding ..... 40@42½@40@40&10%
Bench, First quality ..... 45&10@45&10¢5%
Bench, Second quality ..... 60&10@50&10¢5%
Bailey's (Stanley R. & L. Co) ..... 50&10@50&10&10%
Gage Self Setting 35%

Iron Planes—

Bailey's (Stanley R. & L. Co) ..... 50&10@50&10&10%
Chaplin's Iron Planes ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 25&10@25&10&10%
Sargent's ..... 50&10&10%

Plane Irons—

Wood Bench Plane Irons ..... 50¢5@50¢10¢5%
Buck Bros. 30%
Stanley R. & L. Co... 50&10@50&10&10%
L. & L. J. White ..... 20&5@25%

Planters, Corn, Hand.

Kohler's Eclipse ..... ₩ doz. $9.00

Plates—

Felloe ..... *lb.* 3¾@4c
Self-Sealing Pie Plates (S. S. & Co.), ₩ doz. $2.00 ..... 50%

Pliers and Nippers—

Button Pliers ..... 70¢10@75¢
Gas Burner, per doz., 5 in., $1.15@ $1.20; 6 in., $1.35@$1.45
Gas Pipe.. 7 8 10 12-in.
$1.75 $2.00 $2.75 $3.75
Acme Nippers ..... 50@50&5%
Bernard's:
Parallel Pliers, &c. 35%
Paragon Pliers ..... 50&5%
Lodi Pliers ..... 50&5%
Elm City Fence Pliers 35%
Cronk Hanger Co.:
American Button ..... 75&10%
Cronk's 60%
Improved Button ..... 70&10%
Stub's Pattern 50%
Combination and others 25%
Heller's Farriers' Nippers, Pincers and Tools 50@50&5%
P., S. & W. Tinners' Cutting Nippers. 30@40&10%
Swedish Side, End and Diagonal Cutting Pliers 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels—

Plumbs and Levels ..... 75@75¢10%
Davis Iron, Machinist Nos. 1 to 14.... 20%
Davis Iron, Adjustable Nos. 6 to 49.... 35%
Dixon's 70%
Pocket Levels ..... 75&10&10@75&10%
Stanley R. & L. Co ..... 70&10@70&10&10%
Stanley's Duplex ..... 25&10@25&10&10%
Woods' Extension 33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₩ doz., No. 1, $7.20; No. 2, $11.00 No. 3, $11.00; No. 4, $14.50 ..... 50%

Points, Glaziers'—

Bulk and 1 lb. papers.. lb. 8 @ 8¼c
¼-lb. papers ..... *lb.* 8¾@ 8¾c
¼-lb. papers ..... *lb.* 8¼@ 8¾c

Pokes, Animal—

Ft. Madison Hawkeye ..... ₩ doz. $3.25
Ft. Madison, Western ..... ₩ doz. $3.75

Police Goods—

Manufacturers' Lists ..... 25@25&5%
Tower's 25%

Polish—Metal—

Prestoline Liquid, No. 1 (½ pt.), ₩ doz. $3.00; No. 2 (1 qt.), $9.75 ..... 40%
Prestoline Paste ..... 40&10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₩ doz. 50¢; ₩ gr. $4.50; ¼ ℔ boxes, ₩ doz. $1.25; 1 ℔ boxes, ₩ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₩ doz. $1.25; ₩ gr. $12.00.
Barkeepers' Friend Metal Polish, ₩ doz. $1.75; ₩ gr. $18.00.
Wynn's White Silk, ¼ pt. cans, ₩ doz. $2.00

Stove—

Black Eagle Benzine Paste, 5 ℔ cans ..
₩ ℔ 10¢
Black Eagle, Liquid, ¼ pt. cans.....
₩ doz. 75¢
Black Jack Paste, ¾ ℔ cans, ₩ gro. $9.00
Ladd's Black Beauty, gr. $10.00..... 50%
Joseph Dixon's, ₩ gr. $5.75..... 10%
Dixon's Plumbago..... ₩ ℔ 8¢
Fireside..... ₩ gr. $2.50
Gem, ₩ gr. $4.50..... 10%
Japanese..... ₩ gr. $3.50
Jet Black..... ₩ gr. $3.50
Peerless Iron Enamel, ¼ pt. cans.....
₩ doz. $1.50
Wynn's:
Black Silk, 5 ℔ pail.....each 70¢
Black Silk, ½ ℔ box..... ₩ doz. $1.00
Black Silk, 5 oz. box..... ₩ doz. $0.75
Black Silk, ¼ pt. liq..... ₩ doz. $1.00

Poppers, Corn—

Round or Square:
1 qt. ..... *gro. $6.50@$7.00*
1½ qt. ..... *gro. 9 50@ 10 00*
2 qt. ..... *gro. 10.50@ 11.00*

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots— Glue—

Enameled 45%
Tinned 40%

Powder—

In Canisters:
Duck, 1 lb. each 45c
Fine Sporting, 1 lb. each 75c
Rifle, ½-lb. each 15c
Rifle, 1-lb. each 25c
In Kegs:
Duck, 6½-lb. kegs $2.25
Duck, 12¼-lb. kegs $4.25
Duck, 25-lb kegs $5.00
Rifle, 6¼-lb kegs $1.25
Rifle, 12½-lb. kegs $2.25
Rifle, 25-lb. kegs $4.00

King's Semi-Smokeless:

	Shot Gun	Rifle
Keg (25 ℔ bulk)	$12 00	$15.00
Half Keg (12½ ℔ bulk)	6.25	7.75
Quarter Keg (6¼ ℔ bulk)	3.25	4.00
Case 24 (1 ℔ cans bulk)	14.00	17 00
Half case 12 (1 ℔ cans bik)	7.25	8 75

Presses— Fruit and Jelly—

Enterprise Mfg. Co. ..... 20@25%

Pruning Hooks and Shears—See *Shears.*

Pullers, Nail—

Cyclops ..... 40@40&10%
Diamond B, No. 2, ca e lots, ₩ doz. $6 00
Diamond B, No. 3, case lots, ₩ doz. $5.50
Giant, No. 1, ₩ doz. $18; No. 2, $16.50; No. 3, $15 ..... 40%
Miller's Falls, No. 3, per doz. $12.00..... 15&10%
Pelican, ₩ doz. $9.00..... 40&10%
Scranton, Case Lots:
No. 1 (large), ₩ doz. $6.50; No. 2 (large), $5.75; No 3 (small), $5.00; No. 2-B (large), $5.50; No. 3-B (small), $5.00; No. 2-D (large), $4 50; No 3-D (small) $4 00.

Pulleys—Single Wheel—

Inch	*2*	*2½*	*3*
Awning ..doz.	*$0.45*	*.70*	*.95*
Inch	*2*	*2½*	*2½*

Hay Fork, Swivel or Solid Eye.....

	doz.	*$1.35@1.50*	
Hot House..doz	*$0.65*	*.90*	*1.20*
Inch	*1¼*	*1½*	*1¾*
Screw.....doz.	*$0.15*	*.20*	*.25*
Inch	*1¾*	*2*	*2¼*
Side.....doz.	*$0.30*	*.40*	*.55*
Inch	*1¼*	*1¾*	*2*
Tackle....doz.	*$0.30*	*.45*	*.65*
Inch	*1¼*	*1¾*	*2*

Stowell's:
Ceiling or End, Anti-Friction 60%
Dumb Waiter, Anti-Friction.. 60&10%
Hay Fork, Anti-Friction, 5-in. Wheel, ₩ doz. $12.00..... 50%
Electric Light 60%
Side, Anti-Friction..... 60&10%

Sash Pulleys—

Common Frame; Square or Round End per doz., 1¾ in., 14c.; 2 in., 17c
Auger Mortise, no Face Plate, per doz. 1¾ in., 15c.; 2 in., 18c.
Auger Mortise, with Face Plate, per doz., 1¾ in., 18c.; 2 in., 19c.

Acme.....1¾(in., 16¢; 2 in., 19¢
Common Sense, 1¾ (in.... ₱ doz., 18¢; 2 in., 20¢.
Fox All-Steel, Nos. 3 and 7, 2½ in..... ₱ doz. 25¢
No. 9, 1⅝ in..... ₱ doz. 20¢
Extra for Plated Finish...₱ doz. 20¢
Extra for Anti-Friction Bronze Bushing..... ₱ doz 10¢
Grand Rapids All Steel Noiseless...40%
Ideal No. 13.....1¾ in.. ₱ doz.. 16¢
Niagara.....1¾ in .16¢; 2 in . 19¢
No. 26, Troy....1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in..16¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern.....60@ ...%
Pitcher Spout.....75@ ...%
Wood.....50@50&10%
Pump Leathers. Lower and Plunger Valves—Per gro.:

Inch..	2	2¼	2½	2¾
	$2.20	*2.50*	*2.75*	*3.00*
Inch..	3	3¼	3½	3¾	4
	$3.30	*3.60*	*3.85*	*4.10*	*4.40*

Barnes Dbl. Acting (low list)..... 50%
Flint & Walling's Fast Mail (low list).50%
Flint & Walling's Pitcher Spout.....75%
Loud's Suction Pumps, U. S. Co.....20%
Myer's Pumps, low list 50%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co.....30%

Punches—

Revolving (4 tubes)...doz. $3.75@4.25
Saddlers' or Drive, good..doz. 65@70c
Spring, single tube, good quality... $1.65@1.75
Bemis & Call Co.'s Cast Steel Drive....50%
Bemis & Call Co.'s Check.....55%
Bemis & Call Co.'s Spring.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Steel Screw, B & K. Mfg. Co.....40%
Tinners' Hollow, P., S. & W. Co..... 35@35&5%
Tinners' Solid, P., S. & W.Co., ₱ doz., $1.44.....60%

Rail— Barn Door, &c.—

Cast Iron, Barn Door: Flange Screw Holes for Rd. Groove Wheels:

½	⅝	¾	*In.*
$1.70	*$2.10*	*$5.00*	*100 feet.*

Angular for Sq. Groove Wheels:

Small.	*Med.*	*Large.*	
$1.60	*1.95*	*2.70*	*100 feet.*

Sliding Door, Brnzed Wr't Iron, fl.6¼¢
Sliding Door, Iron Painted....2½@3¢
Sliding Door, Wrought Brass, 1½ in.... lb. 36¢..30%
Cronk's Double Braced Steel Rail, ₱ foot.....3½¢
Cronk's O. N. T. Rail.....3½¢
Lanes' O. N. T., ₱ 100 ft., 1 inch....$2.75
Lanes' Standard, ₱ 100 ft.....3.75
Lawrence Bros.' ..... ₱ ft. 4¼¢
McKinney's None Better..... ₱ ft. 3¾¢
McKinney's Standard..... ₱ ft. 4 ¢
Stowell's Cast Rail. .....1½¢
Stowell's Steel Rail, Plain.....2½
Stowell's Wrought Bracket, Plain....3½¢

Rakes—

Net Prices, Malleable Rakes:

	10	*12*	*14*	*16-tooth*
Shank.....	*$1.50*	*1.60*	*1.75*	*1.85*
Socket.....	*1.65*	*1.80*	*1.95*	*2.10*

Sept. 1, 1900, List:
Cast Steel.....70@5&2%
Malleable.....70@10@75&5%
Lawn Rakes, Metal Head, per doz., 20 teeth.....$3.25@3.50
24 teeth.....$3.60@3.75
Fort Madison Red Head Lawn.....$3 25
Fort Madison Blue Head Lawn.....$3.00
Jackson Lawn, 20 and 30 teeth..... ₱ doz. $4.00
Kohler's:
Lawn Queen, 20-tooth, ₱ doz.....$3.60
Lawn Queen, 24-tooth, ₱ doz.....$3.75
Paragon, 20-tooth, ₱ doz.....$2.85
Paragon, 24-tooth, ₱ doz.....$3.00
Steel Garden, 14-tooth, ₱ doz.....$3.00
Malleable Garden, 14-tooth ₱ doz. $2.25

Rasps, Horse—

Disston's.....75%
Heller Bros.....70&5%
McCaffrey File Co. Horse Rasps.60&10&5%
New Nicholson Horse Rasp.....70&10%
See also *Files.*

Razors—

Boracic.....70%
Fox Razors, No. 42,.. ₱ doz. $30.00 } 40%
Fox Razors, No 44,.. ₱ doz $24.00 } dis.
Fox Razors, No. 88, Platina, ₱ doz $24.00 }
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 90.....$12.00
All other Razors.....40%
Safety Razors.....40%

Razor Strops—

See *Strops, Razor.*

Reels— Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon, Single Action, Multiplying and Quadruple, all sizes.....25%
Hendryx Single Action Series, 102P and PN, 302P and PN, 102 PR and PRN, 302 PR and PRN, 304 P and PN, 00304P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor.50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 002904PN, 0924 and 0924N, 5009N and PN.....40&10%
Shakespeare, Style C.....25%

Registers—

List Sept. 2, 1901.

Black Jap.....
White Jap.....
Bronzed..... } 70%
Nickel Plated.....
Electro Plated.....

There is a good deal of irregularity in prices of Registers, especially in Black Japanned.

Revolvers—

Single Action.....80@85c
Double Action.....$1 30
Automatic $2.75
Hammerless.....$3.85

Riddles, Grain or Sand—

16 in. per doz.....$2.00@$2.25
17 in. per doz.....$2.25@$2.50
18 in. per doz.....$2.50@$2 75

Rings and Ringers—

Bull Rings—

	2	*2½*	*3 Inch.*
Steel.....	*$0 80*	*0.90*	*0.95 doz.*
Copper.....	*1.10*	*1.30*	*1.50 doz.*

Hog Rings and Ringers—

Hill's Rings...gro. boxes, $4.50@4.75
Hill's Ringers, Gray Iron, doz. 55@60c
Hill's Ringers, Mal. Iron, doz. 75@80c
Blair's Rings.....per gro. $5.75@6.00
Blair's Ringers...per doz. $0.65@ .70
Brown's Rings....per gro. $6.00@6.25
Brown's Ringers..per doz. $1.00@1.10
Rapid Rings..... ₱ gro. $6.00
Rapid Ringers..... ₱ doz. $3.50

Rivets and Burrs—

Copper.....50@50&5%
Iron or Steel:
Tinners'.....70@70&10%
Miscellaneous.....70@70&10%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rollers—

Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....50&10&10%
Cronk's Stay..... 66⅔%
Cronk's Brinkerhoff..... 66⅔%
Lane's, Stay..... 33⅓%
Stowell's Barn Door Stay...₱ dos. $1.25

Rope—

Manila, 7-16 in. and larger lb. 10 @10½c
Manila....¾-inch. ....lb. 10½@11 c
Manila ¼ & 5-16 in.....lb. 11 @11½c
Manila, Tarred Rope, 15 thread.....lb. 10 @10½c
Manila Hay Rope. Medium.....lb. 10 @10½c
Sisal, 7-16 in. and larger.... lb. 8 c
Sisal .....⅜-inch.... lb. 8½c
Sisal.....¼ and 5-16 inch.... lb. 9 c
Sisal, Hay Rope, 2 to 10.... ply..... lb. 8 c
Sisal, Tarred, Medium Lath Yarn..... lb. 7½c
Cotton Rope:
Best.....¼-in. and larger lb. 14 c
Medium ....¼-in. and larger lb. 11½c
Com.....¼-in. and larger lb. 9 c
Jute Rope, No. 1, ¼ in. and up..... lb. 6½c
Jute Rope, No. 2, ¼-in. and up..... lb. 6 c
¼c less in good lots

Wire Rope—

Galvanized.....25¢7½&5%
Plain.....30¢7½&5%

Ropes, Hammock—

Covert Mfg. Co.....45&2%
Covert Saddlery Works.....60&5%

Rules—

Boxwood..75¢10¢10¢10¢10@75¢10¢10¢10¢10&5%
Ivory...35¢10¢10@40¢10¢10¢10¢10%
Chapin-Stephens Co.:
Boxwood.....75&10&10@75&10&10&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber ... .50&10%
Stanley R. & L. Co.:
Boxwood....75&10&10@75&10&10&10%
Ivory.....35&10@35&10&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—

See *Paper and Cloth.*

Sash Cords—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers Sausage.*

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins:
Circular..... .....50@50&10%
Rand .....50&10@60%
Cross Cuts .....35&5%
Mulay, Mill and Drag .....50&10%
One-Man Saw..... .....40%
Wood Saws 40%
Hand, Compass, &c..... ....40%
Disston's:
Circular Solid and Inserted Tooth.50%
Band 2 to 14 in. wide.....60%
Band ¼ to 1¾.....70%
Crosscuts.....45@45&10%
Narrow Crosscuts.....50@50&10%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....35@35&7½%
Woodsaw Blades.....40@40&7½%
Woodsaw Rods. 25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 7%, 77, 8..... 25@25&7½%
Hand Saws, Nos 7 107, 107½, 3, 1, 0, 00, Combination.....30@30&7½%
Compass, Keyhole, &c.....25@25&7½%
Butcher Saws and Blades..35@35&7½%
C. E. Jennings & Co.'s.:
Back Saws.....25%
Butcher Saws.....35%
Compass and Key Hole Saws.....25%
Framed Wood Saws.....40%
Hand Saws.....25@30%
Wood Saw Blades.....45%
Peace:
Circular and Mill 50%
Cross Cuts, list Jan. 1, '99.....50%
Hand, Panel and Rip.....30%
Richards-on:
Circular and Mill 50%
Hand, &c 30%
X Cuts, list Jan. 1, '99.....50%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws. 50%
Band Saws..... .....50%
Back Saws..... 25@25&7½%
Butcher Saws.... ....35@35&7½%
Hand Saws.....25@25&7½%
Compass, Keyhole, &c .....25@25&7½%
Wood Saws .....35@35&7½%

Hack Saws—

Disston:
Concave Blades.....25%
Keystone..... .....30%
Hack Saw Frames.....30%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180, 330.....40%
Hack Saws, Nos. 175, 180, 330, complete.....40%
Griffin's Hack Saw Frames 45%
Griffin's Hack Saw Blades.....45%
Star Hack Saws and Blades.....15&10%

Scroll—

Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18: with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete $4.00.....15&10%

Scale Beams—

See *Beams, Scale.*

Scales—

Family, Turnbull's.....30@30&10%
Counter:
Hatch. Platform, ½ oz to 8 lbs. doz. $16 00
Two Platforms, ½ oz to 8 lbs. doz. $16 00
Union Platform, Plain..$1.70@1.90
Union Platform, Striped $1.85@2.15
Chatillon's:
Eureka 25%
Favorite.....40%
Grocers' Trip Scales.....50%
Pelouze Scales—Household, Counter, Confectionery, Postal, Ice, &c.....20%
"The Standard" Portables.....45%
"The Standard" R. R. and Wagon....50%

Scrapers—

Box, 1 Handle .....doz $2.25@2.50
Box, 2 Handle.....doz. $3.75@4.00
Ship, No. 1, doz. $3.50; No 2, $2 25@2.40
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30&10%

Screens, Window, and Frames—

Bonanza Window Screens.....60@60&5%
Fiver Pattern Window Screen.60@60&5%
Maine Window Screen Frames.40&10&5%
Perfection Window Screens....60@60&5%
Phillips' Window Screen Frames..... 60&10&5%
Porter's Hummer Window Screens. 60@60&5%
Porter's Klondike Window Screens ..... 60&2½@60&7½%
Wabash Spring Adj. Screen. .....50% See also *Doors.*

Screw Drivers—

See *Drivers, Screw.*

Screws—Bench and Hand—

Bench, Iron..doz. 1 in., $3.00@5.25; 1¼, $3.50@5.75; 1¼, $4.00@4.50
Bench, Wood, Beech..doz. $3.50@2.75
Hand, Wood.....30@5&5@5%
Hand, R. Bliss Mfg Co 35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, '99.....75¢15@...%
Coach and Lag, Gimlet Point, list Oct. 1, '99.....75¢10@...%
Hand Rail, list Jan. 1, '81.60¢10@...%

Jack Screws—

Standard List.....75@75&10%
Millers Falls.....50&10&10%
Millers Falls, Roller .....50&10%
P., S. & W.....50@50&5%
Sargent.....70&10%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron.50@50&10%
Flat or Round Head, Brass..... 50@50&10%

Set and Cap—

Set (Iron or Steel) .....70¢10%
Sq. Hd. Cap.....65¢10%
Hex. Hd. Cap.....65¢10%

Wood—

List Jan. 1, 1900.
Manufacturers' printed discounts:
Flat Head, Iron.....87½@90%
Round Head, Iron.....85@87½%
Flat Head, Brass .....85@87½%
Round Head, Brass.....83½@85%
Flat Head, Bronze..... 75@80%
Round Head, Bronze.....72½@77½%
Drive Screws.....87½@90%

Scroll Saws—See *Saws, Scroll.*

Scythes—

Grass Scythes:
Natural Finish.....per doz. $7.25
Polished Blade.....per doz. $7.75
Painted or Bronzed..per doz. $7.50
Weed and Bush..per doz. $7.25@7.50

Scythe Snaths—

See *Snaths, Scythe.*

Seeders— Raisin—

Enterprise..... .....25@30%

Sets— Awl and Tool—

Brad Awl and Tool Sets:
Wood Hdle., 10 Awls doz. $2.00@2.25
Wood Hdle., 14 Awls, 6 Tools... doz. $2.50@2.60
Aikens Sets, Awl and Tools: No. 20, ₱ doz. $10.00.....50&10&10%
Fray's Adj. Tool H dls.....Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior: No. 1, $7.50; No. 2 $4.00; No. 3, $5.50.....30&10@30&10&10%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe.... ₱ doz.....$9.00

Nail—

Square.....per gro. $2.50
Round, Blk. and Pol., assorted..... gro. $1.80@2.50
Octagon.....gro. $4.25@4.75
Knurled, Good.....gro. $6.00@6.50
Buck Brothers.....27½%
Cannon's Diamond Point, ₱ gr. $13..25%
Mayhew's.....per gro. $9.00
Snell's Corrugated, Cup Pt. per gro. $7.50
Snell's Knurled, Cup Pt....per gro. $7.50

Rivet—

Regular list.....70@70¢10¢5%

Saw—

Aiken's:
Genuine..... ₱ doz. $5.50@6.00
Imitation ..... ₱ doz. $3.00@3.10
Atkin's.:
Criterion.....40%
Adjustable.....40%
Bemis & Call Co's.:
Cross Cut.....30%
Hammer, new Pat.....45%
Plate.....20%
Spring Hammer.....30%
Disston's Star and Monarch.....25%
Morrill's No. 1, $15.00.....40&20%
Nos. 3 and 4, Cross Cut, $23....50&20 & 5%
No. 5, Mill, $31.00.....50& 10& 0%
No. 10, $13.50.....40&20%
No. 11, $16.00.....40&20%
Taintor Positive, ₱ doz. $18 .....60%

Sharpeners Knife—

Chicago Wheel & Mfg. Co.....65%
Smith & Hemenway Co .....70&5%
Tanite Mills ₱ gross, $14.40....25@33⅓%

Sharpeners Skate—

Eureka Skate Sharpener..... ₱ doz. $2.00

Shaves, Spoke—

Iron.....doz. $1 00@1.95
Wood.....doz. $1.75@2.00
Bailey's (Stanley R. & L. Co).....50&10%
Goodell's, ₱ doz. $9.00.....15&10%

Shears—

Cast Iron...	*7*	*8*	*9 in.*
Best	*$16.00*	*18.00*	*20.00 gro.*
Good.....	*13 00*	*15.00*	*17 00 gro.*
Cheap.... $5.00		*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality, Jap.....70@70¢10%
" Nickel.....60@60¢10%
Fair qual. Jap.....80@80¢5%
" Nickel.....75@75¢10%
Tailors' Shears.....40@40¢10%
Acme Cast Shears.....40@40&5%
Heinisch's Tailors' Shears.....40%
Wilkinson's Hedge.....50%
Wilkinson's Sheep.....1900 list, 50%

Tinners' Snips—

Steel Blades.....20¢10%
Steel Laid Blades .....40¢10%
Forged Handles, Steel Blades, Berlin.. 40@40&10%
Jennings & Griffin Mfg. Co's. 7 to 10 inch 50%
Niagara Snips.....40%
P. S. & W. Co.....20%

Pruning Shears and Tools—

Cronk's Grape Shears.....33⅓%
Cronk's Pruning Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....25@25&10%
Disston's Pruning Hook, ₱ doz. $12.00 25@25&10%
John T. Henry Mfg. Company:
Pruning Shears, all grades..40@40&5%
Orange Shears.....50&10@50&20%
Grape.....40&10@50%
Tree Pruners.....75%
Nagley's Pruning Shears.....10&5%
P., S. & W. Co.....33⅓%

Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Patent Roller Hatfield's, Sargent's list, 75&10&10%
Reading..... .....70&10@75%
R. & E. list..... .....33⅓%
Wrightsville, Hatfield Pattern.....80%

Sliding Shutter—

Reading list.....70&10@75%
R. & E. list..... .....33⅓%
Sargent's list.....50&10⅓&10%

Shells— Shells, Empty—

Brass Shells, Empty:
First quality, all gauges.....60&5%
Climax, Club, Rival, 10 and 12 gauge.. 65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Smokeless 10, 12, 16 and 20 gauge. 33⅓&10%
Blue Rival, New Climax, Primrose Club, Yellow Rival, 10, 12, 16 and 20 gauge.....15%
Climax Club, League, Rival, 14, 16 and 20 gauge ($7.50 list)... 20&5%
Climax Club, League, Rival 10 and 12 gauge..... .....25&5%
Defiance, High Base, New Victor, Nitro, Repeater, 10, 12 16 and 20 gauge.....15%
Trap and Metal Lined, 10, 12, 16 and 20 gauge.....33⅓&10&5%

Shells, Loaded—

Loaded with Black Powder.....40&5%
Loaded with Smokeless Powder, medium grade..... 40&10&5%
Loaded with Smokeless Powder, high grade. .....40&10&10&5%

Shoes, Horse, Mule, &c.—

F. o. b., Pittsburg.

Iron.....per keg $3.50
Steel.....per keg 3.25
Burden's, all sizes, ₱ keg..... ..$3.60

Shot—

Drop, up to B, 25-lb. bag....$1.45@1.50
Drop, B and larger, per 25-lb. bag.. $1.70@1.75
Buck, 25-lb. bag.....$1.70@1.75
Chilled, 25 lb. bag.....$1.70@1.75
Dust Shot, 25-lb. bag.....$2.00
Markle's Chilled.....$1.75
Tatnall's Chilled.....$1.75

NOTE.—*There is some irregularity in prices because jobbers often undersell the manufacturers.*

Shovels and Spades—

No. 2, Polished, Sq. or Rd. Point, D or L Handle:

	A1, 1st Grade.	*B1, 2d Grade*
Plain Back....	*$10 80*	*$9 60*
Strap Back....	*9.90*	*9.00*
Cleveland Pat'n	*10.20*	*9.30*

	C8, 3d Grade.	*D1, 4th Grade*
Plain Back....	*$8.70*	*$8.10*
Strap Back....	*8.10*	*7.50*
Cleveland Pat'n	*8.40*	*7.80*

All other sizes add 70c doz.
Black deduct 50c doz.

Note.—The above are the regular Association prices but are often shaded by

Jobbers $0.50@1.00, and Common, Plain Back Shovels are generally sold by jobbers at about $6.75.

Sieves and Sifters—

Hunter's Imitation..gro. $9.50@10.00

Buffalo Metallic Blued, S. S. & Co., ₱ gr.:

14&16	16&18	18&20
$12.00	$13.80	$15.00

F. J. Meyers' Mfg. Co.:
Eclipse.....₱ gr. $8.25
Excelsio .....₱ gr. $10.35
Hunter's Genuine.....₱ gr. $12.50
No Name, Hunter's.....₱ gr. $11.50
Standard.....₱ gr. $10.35
Shaker (Barler's Pat.) Flour Sifters, ₱ doz., $2.00.....90%

Sieves, Tin Rim—

Per dozen

Mesh	14	16	18	20
Black, full size	$0 95	.98	1.00	1.10
Plated, full size	$1.05	1.08	1.10	1.20
Black, scant	$0.78	.80	.83	

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.

Mesh 18, Nested, doz.....$0.65@0 75
Mesh 20, Nested, doz..... .75@ .85
Mesh 24, Nested, doz..... .90@1.00

Sinks—

Cast Iron—

Standard list.....65@65&10%
NOTE.—*There is not entire uniformity lists used by jobbers.*

Wrought Steel—

New Era, Galv'd and Enameled...70&5%
New Era, Painted.....60&10%
L. & G. Mfg. Co., Galvanized.....50%
L. & G. Mfg Co., Enameled.....60%

Skeins, Wagon—

Cast Iron.....70@10@75%
Malleable Iron.....40@10@50%
Steel.....40@40&10%

Slates—

Factory Shipments.

"D" Slates..... .....50@10@10@10%
Unexcelled, etc., Noiseless Slates..60@ 8 tens %
Victoria, etc., Noiseless Slates..60@ 7 tens @5%
Wire Bound.....50@10@5%
Web Hinge..... .....5%

Slaw Cutters—See *Cutters.*

Slicers, Vegetable—

Sterling $ 2.00..... ....33⅓

Snaps, Harness—

German.....40@40@10%
Covert Mfg. Co.:
Derby.....35&2%
High Grade.....45&2%
Jockey.....40&2%
Trojan.....45&2%
Yankee.....35&2%
Yankee, Roller.....30&2%
Covert's Saddlery Works:
Crown.....60%
German.....60%
Model.....60%
Triumph.....60%
W. & E. T. Fitch Co.:
Bristol.....40&10%
Empire.....50&5%
German.....40%
National.....50&5%
Perfect.....40%
Clipper.....50&5%
Champion.....40%
Security.....40%
Victor.....60&5%
Oneida Community:
Solid Steel.....65@65&10%
Solid Swivel.....65&10@65&10@10%
Sargent's Patent Guarded.....66⅔&10%

Snaths—

Scythe..... .....45@5@5%

Snips, Tinners'—See *Shears.*

Soldering Irons—

See *Irons, Soldering.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Silver Plated—

Good Quality.....50@10@60@10@5%
Cheap..... ...60@60@10%
International Silver Co.:
1847 Rogers Bros .....40&10%
Rogers & Bro., William Rogers Eagle Brand, and Rogers & Hamilton.50&10%
Anchor, Rogers brand.....60%
Wm. Rogers & Son.....60&10%
Simeon L. & Geo. H. Rogers Co.:
Silver Plated Flat Ware.....60%
No. 77 Silver Plated Ware.....60&10%

Miscellaneous—

German Silver.....60@10@60@10@10%
Simeon L. & Geo. H. Rogers Co.:
German or Nickel Silver, Special list 1. &10%

Tinned Iron—

Teas.....per gro. 45@5.5c
Tables.....per gro. 90c@$1.00

Springs—

Door—

Gem (Coil).....20%
Star (Coil).....30%
Torrey's Rod, 39 in....₱ doz. $1.10@1.25
Victor (Coil).....50&10&10%

Carriage, Wagon, &c.

1¼ in. and Wider:
Black or ⅛ Bright, lb.....5c
Bright, lb..... .....5½c
Painted Seat Springs:
1½ x3x 26 and smaller, per pr.45@48c
1½ x 2 x 28 per pr..... .52½@56c
1½ x 3 x 28 and narrower, per pr. 70@75c

Sprinklers, Lawn—

Enterprise.....25@29%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....30%

Squares—

Nickel plated.... } *List Jan. 5, 1900*
Steel and Iron... } .....70@10@75%
Rosewood Hdl Try Square and T-Bevels .....60@10@10@10%
Iron Hdl. Try Squares and T-Bevels. 50@10@40@10@10%
Disston's Try Sq. and T-Bevel's.....5&10%
Winterbottom's Try and Miter.....50&10%

Squeezers—

Lemon—

Wood, Common, gro., No. 0, $5.25 @5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap .....doz. $2.50@2.75
Good Grade.....doz. $3.00@3.50
Tinned Iron.....doz. $0.75@1.25
Iron, Porcelain Lined doz. $2.90@3.25
Jennings' Star.....₱ doz. $1.85@1.90

Staples—

Barbed Blind .....lb. 7@7½c
Electricians', Association list..... 80@10&10&10%
Fence Staples, same price as Barbed Wire. See Trade Report.
Poultry Netting, Staples....per lb.. 2½@2½c
Grand Crossing Tack Co.'s list....80&10%

Steels, Butchers'—

Dick's.....30%
Foster Bros'.....30%
Hartzell Cutlery Co.....40&5%
C. & A. Hoffmann's.....40%

Steelyards.....25@25&10%

Stocks and Dies—

Blacksmiths'.....40@40&10%
Gardner Die Stocks No. 1.....50%
Gardner Die Stocks, larger sizes.....40%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25@30%
Curtis Reversible Ratchet Die Stock.25%

Stone—

Scythe Stones—

Chicago Wheel & Mfg. Co:
Gem Corundum, 10 inch, $3.00 per gro., 12 inch, $10.80
Pike Mfg. Co. 1901 list:

Black Diamond S. S.	₱ gro. $12.00	33⅓
Lamoille S. S.	₱ gro. $11.00	
White Mountain S. S.	₱ gro. $9.00	
Green Mountain S. S.	₱ gro. $6.00	
Extra Indian Pond S. S.	₱ gro. $7.50	
No. 1 Indian Pond S. S.	₱ gro. $7.00	
No. 2 Indian Pond S. S.	₱ gro. $4.50	
Leader Red End S. S.	₱ gro. $4.50	
Balance of 1901 list		33⅓%

Oil Stones, &c.

Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit.....50%
Gem Corundum Axe, Single or Double Grit.....55%
Gem Corundum Slips.....55%
Gem Corundum Razor Hones.....33⅓

Pike Mfg. Co. 1901 list:

	₱ lb.	
Arkansas Stone, No. 1, 3 to 5¼ in.	$2.80	25%
Arkansas Stone, No. 1, 5¼ to 8 in.	$3.50	
Arkansas Slips No. 1	$4.00	
Lily White Washita 4 to 8 in	.60¢	
Rosy Red Washita, 4 to 8 in	.60¢	
Washita Stone, Extra, 4 to 8 in.	.50¢	
Washita Stone, No. 1, 4 to 8 in.	.40¢	
Washita Stone, No. 2, 4 to 8 in.	.30¢	
Lily White Slips	.90¢	
Rosy Red Slips	.90¢	
Washita Slips, Extra	.80¢	
Washita Slips, No. 1	.70¢	
India Oil Stones (entire list)		25%
Hindostan No. 1, Regular	₱ lb 80¢	33⅓%
Hindostan No. 1 Small	₱ lb 10¢	
Axe Stones (all kinds)		33⅓%
Turkey Oil Stones, ex. 5 to 8 in.	₱ lb 80¢	33⅓%
Queer Creek Stones, 4 to 8 in.	.20¢	
Queer Creek Slips	.10¢	
Sand Stone	.5¢	40%
Belgian, German and Swaty Razor Hones		40%
Natural Grit Carving Knife Hones, ₱ doz	$3.00	33⅓%
Quick Edge Pocket Knife Hones, ₱ doz	$3.00	
Mounted Kitchen Sand Stone, ₱ doz	$1.50	

Tanite Mills:
Emery Oil, ₱ doz. $5.00.....50@60%

Stoners—

Cherry—

Enterprise.....25@30%

Stops, Bench—

Millers Falls.....15&10%
Morrill's...₱ doz., No. 1, $10.00..50&20%
Morrill's, No. 2, $11.00.....50&10%

Stops, Window—

Ives' Patent.....25&5%

Stove Boards—

See *Boards, Stove.*

Stove Polish—See *Polish, Stove.*

Strainers, Pump—

Diamond Joe Pump Strainers..per doz. 75¢

Straps, Box—

Cary's Universal case lots.....20&10%

Stretchers, Carpet—

Cast Iron, Steel Points....doz. 55@65c
Socket.....doz. $1.75

Strops, Razor—

Smith & Hemenway Co.....70%

Stuffers, Sausage—

Enterprise Mfg. Co.....25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97.....30%

Tacks Brads, &c.—

List Jan. 15, '99.

Carpet Tacks, American 90@30@....%
American Cut Tacks....90@30@....%
Swedes Iron Tacks .....90@30@....%
Swedes Upholsterers' Tacks..... 90@30@....%
Gimp Tacks.....90@40@....%
Lace Tacks.....90@40@....%
Trimmers' Tacks.....90@30@....%
Looking Glass Tacks.....70@10%
Bill Posters' and Railroad Tack.... 90@30@....%
Hungarian Nails .....80@15%
Common and Patent Brads....80@10%
Trunk and Clout Nails.....80@10%
NOTE.—*The above prices are for Straight Weights.* An extra 5% is given Star Weights** and an extra 10@5% on Standard Weights.****

Miscellaneous—

Double Point Tacks.....30@6 or 7 tens
Steel Wire Brads, R. & E. Mfg. Co.'s list.....50@10@60%
See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.....30-gal. $3.20
Emerald, S. S. & Co.....60-gal., $4.00
Queen City S. S. & Co., 80-gal.....$3.50
Queen City S. S. & Co., 60-gal.....$4.25

Tapes, Measuring—

American Asses' Skin.....40@10@50%
Patent Leather.....25@30@5%
Steel.....40@40@5%
Chesterman's.....25@25@5%
Eddy's Steel.....40@40&5%
Eddy's Metallic.....33⅓@33⅓&5%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899.....35%
Lufkin's Steel.....33⅓@35%
Lufkin's Metallic.....30@30&5%

Teeth Harrow—

Steel Harrow Teeth, plain or headed, base per lb.....2¼c

Thermometers—

Tin Case.....80@10@90@10@5%

Ties, Bale—Steel.

Standard Wire.....50@10@5%

Ties, Wall—

Cleveland Wire Spring Co.:
Galv. Steel 5 32 x 6½ in. ₱ 1000..$10.00
Galv. Steel 5-32 x 8½ in. ₱ 1000..$11.00
Galv. Steel 5-32 x 11½ in. ₱ 1000..$12.00
Galv. Steel 5 32 x 15½ in. ₱ 1000 $14.00

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

L. & I. J. White.....20@20&5%

Saw—

Atkins' Cross Cut Saw Tools.....40%
Simonds' Improved.....33⅓%
Simonds' Crescent.....25%

Ship—

L. & I. J. White.....25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme..... doz. $1.15@1.25; gro. $10.50@11.00
Harper, Champion or Paragon .. doz. $1.25@1.40; gro. $12.00@12 50

Game—

Oneida Pattern.....75c@10c@5@80@5%
Newhouse.....45@45&5%
Hawley & Norton. .....65&5@65&10%
Victor (Oneida Pattern) .....75@75&5%
Star (Blake Pattern).....65&10@70&5%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes.... 8½@9c
Mouse, Round or Square Wire..... doz. $0.85@1.00
American Pattern French Rat and Mouse Traps—
No. 1, Detroit Marty Pattern, ₱ doz. $4.50; in ⅛ gro. lots, ₱ doz.....$4.00
No. 2, Detroit Marty Pattern, ₱ doz. $1.25; in ⅛ gro. lots, ₱ doz.....$4.00
Detroit Marty Pattern Mouse, ₱ doz. $2.00; in ⅛ gro. lots, ₱ doz.....$1.75
Diamond Joe Mouse Traps....per doz. 60¢
Diamond Joe Rat Traps..... per doz. $1.00
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, Each $1.12½;..₱ doz. $12.00
No. 3, Rat, ₱ doz. $6.00; case of 50 $5.25 doz.
No. 3½, Rat, ₱ doz. $4.75; case of 72 $4.25 doz.
No. 4, Mouse, ₱ doz. $3.50; case of 72 $3.75 doz.
No. 5, Mouse, ₱ doz. $2.75; case of 150 $2.25
Schuyler's Rat Killer, No. 1, ₱ gr. $30.00; No. 2, ₱ gr. $30.00; Mouse, No. 3, $18.00.....50%

Target—

Markle's, each..... ..$3.50

Trimmers, Spoke—

Bonney's Nos. 1 and 2..... 40%

Trowels—

Disston Brick and Pointing..... .....30%
Disston Plastering.....25%
Disston "Standard Brand" and Garden Trowels.....40%
Never-Break Steel Garden Trowels..... gro. $7.00
Peace's Plastering 30%
Rose Brick and Plastering.....25&5%
Woodrough & McParlin, Pl'st'ring.....25%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....50%
Daisy Stove Trucks, Improved pattern ₱ doz. $18.50
Model Stove Trucks.....₱ doz. $18.50

Tubs, Wash—

	No. 1	2	3
Galvanized, per doz.	*$5.00*	*5 50*	*6.00*

Galvanized Wash Tubs (S. S. & Co.):

No.	1	2	3	10	20	30
Per doz	$5 25	6.00	6.75	6.50	7 25	8.00

Twine—

Miscellaneous—

Flax Twine—	*BC*	*B.*
No. 9, ¼ and ½-lb. Balls..	*22c*	*24c*
No. 12, ¼ and ½-lb. balls..	*18c*	*20c*
No. 18, ¼ and ½-lb. Balls..	*16c*	*18c*
No. 24, ¼ and ½-lb. Balls	*15½c*	*17½c*
No. 36, ¼ and ½-lb. Balls..	*15c*	*17c*
Chalk Line, Cotton, ½-lb Balls.... 22@22½c		
Cotton Mops, 6, 9, 12 and 15 lb. to doz .....7@8c		
Cotton Wrapping, 5 Balls to lb .... according to quality. ..10¼c@17c		
American 2-Ply Hemp, ¼ and ½-lb. Balls.....12@15c		
American 3 Ply Hemp, 1-lb. Balls.. 12@15c		
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine).....8½c		
India 3-Ply Hemp, 1-lb. Balls.....8½c		
India 3-Ply Hemp, 1½-lb. Balls.... 7c		
2, 3, 4 and 5-Ply Jute, ½-lb. Balls... 9½@10c		
Mason Line, Linen, ½-lb. Balls...45c		
No. 264 Mattress, ¼ and ½-lb. Balls.37c		
Wool.....7c		

Vises—

Solid Box.....50@50&10%

Parallel—

Athol Machine Co.:
Simpson's Adjustable..... .....40%
Standard.....40%
Amateur.....25%
Bonney's.....40%
Fisher & Norris Double Screw....15&10%
Hollands':
Machinists'.....40%
Kevstone.....65&5%
Lewis Tool Co.....20@30%
Massey's Perfect.....15@20%
Massey's:
Clincher.....30@40%
Combination, Quick Adj.....40%
Woodworker's.....15@20%
Merrill's.....20%
Miller's Falls.....50&10&10%
Parker's:
Victor.....20@25%
Regulars.....20@25%
Vulcan's.....40@45%
Combination Pipe.....55@60%
Prentiss.....20@25%
Sargent's.....40%
Snediker's X. L.....20@25%
Stephens'.....20@25%
Columbian Hdw. Co 40%

Saw Filers—

Bonney's, No. 1, $13; No. 3, $16 .....50%
Disston's D 3 Clamp and Guide, ₱ doz $30.....25%
Reading.....60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....45&50%

Miscellaneous—

Bignall & Keeler Combination Pipe Vise.....60%

Parker's Combination Pipe:
87 Series.....60%
187 Serels.....60&5%
No. 870..... .40%

Wads—Price Per M.

B. E., 11 up.....	*60c*
B. E., 9 and 10.....	*70c*
B. E., 8.....	*80c*
B E., 7.....	*80c*
P. E., 11 up.....	*$1.00*
P. E., 9 and 10.....	*1.25*
P. E., 8.....	*1.50*
P. E., 7.....	*1.50*
Ely's B. E., 11 and larger..	*$1.70@1.75*
Ely's P. E., 12 to 20	*$3.00@3.25*

Dis. 30&2½

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Aluminum—

S. S. & Co. Reduced List..... .....40%

Cast Iron, Hollow—

Stove Hollow Ware:
Ground.....65%
Unground. 70%
White Enameled Ware:
Maslin Kettles.....75@10@5@80%
Covered Ware:
Tinned and Turned..... ..... 40@10@40&10@5%
Enameled and Plain..60@50@10@5%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware, list July '99, 33⅓&10%
L. & G. Opal Enameled Ware.....65%
Iron Clad Ware.....70&10%
Never Break Enameled....50&5@50&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch.....	*6*	*7*	*8*	*9*
Each.....	*45c*	*50c*	*55c*	*65c*

Steel Hollow Ware.

Avery Spiders & Griddles .....65@65&5%
Avery Kettles.....60%
Porcelained.....50&5@50&10%
Never Break Spiders and Griddles..... 65&5%
Never Break Kettles.....60%
Solid Steel Spiders & Griddles. ....65&5%
Solid Steel Kettles.....60%
Solid Steel Ware, Enameled ..... 50&5%

Washboards—

Solid Zinc: ₱ doz
Crescent, family size, bent frame..$3.00
Red Star, family size, stationary protector.....$3.00
Double Zinc Surface:
Saginaw Globe, family size, stationary protector.....$2.85
Cable Cross, family size, stationary protector $2.40
Single Zinc Surface:
Salad, family size, open back perforated.....$2.40
Saginaw Globe, protector, family size, ventilated back $2.25

Brass Surface:
Brass King, Single Surface, open back $3.00
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.00

Washers—

Leather, Axle—

Solid.....85c&10c@85c&10c@10c&10%
Patent.....85c&10@85c&20%
Coil: ⅜ 1 1½ 1¼ *Inch.*
10c 11c 13c 13c *per 100*

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers....$5.10 4.20 2.90 2.70 2.50
In lots less than one keg add ¼c per lb., 5-lb. boxes add ½c to list.

Cast Washers—

Over ½ inch, barrel lots, per lb...... 1½@1¾c

Washer Cutters—
See *Cutters, Washer.*

Washing Machines—
See *Machines, Washing.*

Water Coolers—
See *Coolers, Water.*

Wedges—

Oil Finish.....*lb.* 2.90@3.10c

Weights, Sash—

Per ton, f.o.b. factory....$19.00@22.50

Some Foundries make price $1@$2 lower.

Well Buckets, Galvanized
See *Pails, Galvanized.*

Wheels Well—

8-in., $1.55@1.75; 10-in., $1.80@2.10; 12-in., $2.35@2.75; 14-in., $3.75@4.65

Wire and Wire Goods—

Bright and Annealed:
6 to 9.....72½c&5@72½c&10%
10 to 18.....72½c&10@72½c&10c&5%
19 to 26.....75c&10c&2½@75c&10c&7½@
27 to 36.....75c&10c&7½@3c&2½%
Galvanized:
6 to 18.....70@70c&5%
19 to 26.....72½c&5@72½c&10%
27 to 36.....72½c&10@72½c&10c&5%
Coppered:
6 to 9.....70c&5@70c&10%
10 to 18.....70c&10@70c&10c&5%
19 to 26.....75c&7½@75c&10c&2½%
27 to 36.....75c&10@75c&10c&5%
Tinned:
6 to 14.....75@75c&7½%
15 to 18.....72½c&5@75%
19 to 26.....70c&5@70c&5c&5%
27 to 36.....70@70c&5%
Annealed Wire on Spools..70c&5@70 c&10%

Brass and Copper Wire on Spools.. 60c&5@50c&10%
Brass, list Feb. 26, '96.....25%
Copper, list Feb. 26, '96.....15%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to £, 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—
List April 1, 1901.....85c&10@..%

Wire Cloth and Netting—
Galvanized Wire Netting...35@35c&5%
Painted Screen Cloth per 100 ft.... $1.00@1.10

Light Hardware Grade:
2-18 Mesh, Plain (8c. list) sq. ft... 1¼@1¾c
2-18 Mesh, Galv. (8c. list) sq. ft... 2¼@2¾c

Wire, Barb—See *Trade Report.*
Wire Rope—See *Rope, Wire.*

Wrenches—

Agricultural.....70c&10@75c&5%
Case lots.....75c&10%
Acme .....60c&10%
Alligator.....70%
Baxter's S.....60c&10%
Bull Dog.....70%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable S Pipe.....40%
Brigg's Pattern.....30&10%
Combination Black.....40&5%
Combination Bright.....40%
Cylinder or Gas Pipe.....50%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....55%
Bindley Automatic.....30%
Boardman's.....33⅓%
Coes' Genuine.....40c&10c&5&5%
Coes' "Mechanics'".....40c&10c&10c&5&5%
Donohue's Engineer.....40c&10%
Eagle.....50c&10%
Elgin Wrenches.....40%
Elgin Monkey Wrench Pipe Jaws...33⅓%
Gem Pocket.....30%
Hercules.....70%
Knife Handle, Machinists' (W. & B.):
Case lots.....50c&10%
Less than case lots.....50c&5%
Improved Pipe (W. & B.).....60%
Solid Handles, P.S. & W.....50@50c&10%
Triumph.....60c&10%

Wrought Goods—
Staples, Hooks, &c., list March 17 '92.....85c&5@90%

Yokes Neck—
Covert Saddlery Works, Trimmed.60&5%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—
Fort Madison's Farmers & Freighters'.. list net

Zinc—
Sheet.....*lb* 6¼c@6¾c

PAINTS, OILS AND COLORS—Wholesale Prices.

White Lead, Zinc, &c.

Lead, Foreign white, in Oil.. .. 7¼@ 9⅜
Lead, American White, in Oil:
Lots of 500 ℔ or over ..@ 6¼
Lots less than 500 ℔ .. @ 7
Lead, White, in oil, 25 ℔ tin pails, add to keg price.. .. @ ⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price .. @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.. .. @ 1½
Lead White, Dry in bbls..... 5½@ 6
Lead, American, Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry..... ℔ ℔ 4⅜@ 4⅞
Zinc, Paris, Red Seal, dry..... .. @ 8⅝
Zinc, Paris, Green Seal, dry .. @ 9⅜
Zinc, Antwerp Red Seal, dry.... .. @ 6⅜
Zinc, Antwerp, Green Seal, dry .. @ 7¾
Zinc, V. M. French, in Poppy Oil, Green Seal:
Lots of 1 ton and over.....12 @12½
Lots of less than 1 ton.....12½@12¾
Zinc, V. M French, in Poppy Oil, Red Seal:
Lots of 1 ton and over.....10¾@11¼
Lots of less than 1 ton.....11@11¼
DISCOUNTS.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors.

Black, Carbon.....℔ ℔ 8 @20
Black, Drop, Amer..... 4 @ 7
Black, Drop, Eng..... 7 @11
Black, Ivory.....12 @21
Lamp, Com..... 4½@ 6
Blue, Celestial.....℔ ℔ 4 @ 6
Blue, Chinese.....30 @35
Blue, Prussian.....28 @34
Blue, Ultramarine..... 4 @20
Brown, Spanish..... ½@ 1
Brown, Vandyke, Amer..... 1¾@ 2½
Brown, Vandyke, Foreign..... 2½@ 3½
Carmine, No. 40.....℔ ℔2.05@2.75
Green, Chrome, ordinary..... 5 @ 6½
Green, Chrome, pure.....16 @20
Lead, Red, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over..... @ 6
Lots less than 500 ℔..... @ 6½
Litharge, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over..... @ 6
Lots less than 500 ℔..... @ 6½
Ocher, French Washed..... 1¾@ 1⅞
Ocher, Dutch Washed..... 4¾@ 5
Ocher, American ... ℔ ton $10.00@15.00
Orange Mineral, English.. ℔ ℔ 8@11¼
Orange Mineral, French.....11 3-16@11¾
Orange Mineral, German..... 8@ 9¼
Orange Mineral, American .... 8 @ 8¾
Red, Indian, English..... 4½@ 8½
Red, Indian, American..... 3 @ 3¾
Red, Turkey, English..... 4 @ 6
Red, Tuscan, English..... 7 @10
Red, Venetian, Amer., ℔ 100 ℔. 80@1.75
Red Venetian, English ℔ 100 ℔ 1.80@3.00
Sienna, Italian, Burnt and Powdered.....℔ ℔ 3½@ 7½
Sienna, Ital., Raw, Powd..... 3½@ 7½
Sienna, American, Raw..... 1½@ 2
Sienna, American, Burnt and Powdered.....℔ ℔ 1½@ 2
Talc, French.....℔ 100 ℔ $1.25 @1.50
Talc, American ..90 @1.10
Terra Alba, French, ℔ 100 ℔ .95 @1.00
Terra Alba, English .....95 @1.00
Terra Alba, American No. 1....65 @85
Terra Alba, American No. 2....45 @50
Umber, Turkey, Bnt. & Pow. ℔ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer..... 1½@ 2
Umber, Raw, Amer..... 1½@ 2
Yellow, Chrome .....10½@25
Vermilion, American Lead.....10 @40
Vermilion, Quicksilver, bulk.. .. @70
Vermilion, Quicksilver, bags.... @71
Vermilion, English, Import.. .80 @95
Vermilion Chinese.... .. .$1.05@1.20

Colors in Oil.

Black, Lampblack..... 12 @14
Blue, Chinese..... 36 @40
Blue, Prussian.....32 @36
Blue, Ultramarine.....13 @16
Brown, Vandyke..... 9½@13
Green, Chrome.....10 @12
Green, Paris..... .. @24
Sienna, Raw.....10 @13
Sienna, Burnt.....10 @13
Umber, Raw..... 9½@12
Umber, Burnt..... 9½@12

Miscellaneous.

Barytes, Foreign, ℔ ton....$19.00@21.00
Barytes, Amer. floated..... 19.00@20.00
Barytes, Crude, No. 1..... 9.00@10.00
Chalk, in bulk.....℔ ton 2.50@ 2.60
Chalk, in bbls.....℔ 100 ℔ ..@ 35
China Clay, English..℔ ton 12.00@17.50
Cobalt, Oxide.....℔ 100 ℔ 2.26@ 2.50
Whiting, Common ℔ 100 ℔ .40@ .60
Whiting, Gliders..... .45½@ .65
Whiting, extra Gliders'.... .55@ .68

Putty.

In bladders $2.25
In bulk..... 1.25
In cans 1 ℔ to 5 ℔..... 3.25
In cans 12 ℔ to 25 ℔..... 2.25

Spirits Turpentine.

In Southern bbls.....36½@37
In machine bbls .....37 @37½c

Clue.

Cabinet.....11½@16
Extra White.....18 @23
French.....12 @16
Irish.....13½@16
Low Grade.....℔ ℔ 9 @12
Medium White..... .14½@16½

Animal, Fish and Vegetable Oils.

Linseed, City, raw.....℔ gal 63@66
Linseed, City, boiled..... 67 @68
Linseed, State and West'n, raw.65 @67
Linseed, raw Calcutta see l.... .. @85
Lard, Prime..... 72 @73
Lard, Extra No. 1..... .50 @52
Lard, No. 1..... 43 @44
Cotton-seed, Crude..... .. @ ..
Cotton-seed, Summer Yellow, prime..... 40 @41
Cotton-seed Summer Yellow, off grades..... .. ..38 @38½
Sperm, Crude..... .. @ ..
Sperm, Natural Spring..... .. @ ..
Sperm, Bleached Spring..... .. @ ..
Sperm, Natural Winter..... .61 @62
Sperm, Bleached Winter.....64 @65
Whale, Crude..... .. @ ..
Whale, Natural Winter..... .. @43
Whale, Bleached Winter..... .. @47
Menhaden, Crude, Sound..... 23 @24
Menhaden, Light Strained..... 28 @29
Menhaden, Bleached Winter...31 @32
Menhaden, Ex Bleached Winter34 @35
Tallow, prime.....52½@53½
Cocoanut, Ceylon..... .. 6 @ 6¼
Cocoanut, Cochin..... 12 @13
Cod, Domestic..... 30 @31
Cod, Newfoundland..... 34 @35
Red Elaine..... 35 @36
Red Saponified.....℔ ℔ 5½@ 5¾
Olive, Italian, bbls..... 58 @ 61
Neatsfoot, prime..... 52 @ 53
Palm, prime, Lagos.....℔ ℔ 5½@ 5¾

Mineral Oils.

Black, 20 gravity, 25@30 cold test.....℔ gal. 9¾@ 10¼
Black, 29 gravity, 15 cold test. 10¾@ 11¼
Black, summer..... 9½@ 9¾
Cylinder, light filtered..... 14½@17½
Cylinder, dark filtered..... 11¼@15½
Paraffine, 903-907 gravity..... 12¼@12¾
Paraffine, 903 gravity..... 11¼@11¾
Paraffine, 883 gravity..... 9½@10
Paraffine, red, No. 1..... 12¾@13¼
In small lots ¼c advance.

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

SEPTEMBER 18, 1901.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ ₩ ℔; Square, 0.8¢ ₩ ℔

1 to 1¼ in. round and square	₩ ℔ 1.85@1.95¢
1¼ to 4 in. x ⅜ to 1 in.	₩ ℔ 1.85@1.95¢
Refined Iron:	
1 to 1¼ in. round and square	₩ ℔ 1.90@2.00¢
1¼ to 4 in. x ⅜ to 1 in.	₩ ℔ 1.90@2.00¢
1¼ to 4 in. x ¼ to 5-16	₩ ℔ 2.05@2.15¢
Rods—⅜ and 11-16 round and square	₩ ℔ 2.25@2.35¢
Angles:	Cts ₩ ℔
3 in. x ¼ in. and larger	2.30¢
3 to 3½ in. x 3-16 in.	2.30¢
1¼ to 3 in. x ¼ in.	2.30¢
1¼ to 2¼ in. x 3-16 in and thicker	2.10¢
1 to 1¼ in. x 3-16 in.	2.20¢
1 to 1¼ x ¼ in.	2.30¢
¾ x ¼ in.	2.40¢
½ x ¼ in.	2.50¢
⅜ x ¼ in.	3.50¢
¼ x 3-32 in.	4.50¢
Tees:	
1 in.	2.60¢
1¼ in.	2.40¢
1½ in. and larger	2.30¢
Beams	2.50¢
Channels, 3 in. and larger	2.50¢
Bands—1¼ to 6 x 3-16 to No. 8	₩ ℔ 2.30¢
"Burden's Best" Iron, base price	₩ ℔ 3.15¢
Burden's "H. B. & S. Iron, base price	₩ ℔ 2.95¢
" Ulster	₩ ℔ 3.60¢
Norway Bars	3.75@4.25¢
Norway Shapes	4.00@4.50¢

Merchant Steel from Store—

	per ℔
Bessemer Machinery	1.90 to 1.95¢
Toe Calk, Tire and Sleigh Shoe	2.00@2.50¢
Best Cast Steel, base price in small lots	7½¢
Best Cast Steel Machinery, base price in small lots	6 ¢

Soft Steel Sheets—

¼ inch	2.20¢	No. 14	3.00¢
5-16 inch	2.30¢	No. 16	3.20¢
No. 8	2.40¢	No. 18	3.40¢
No. 10	2.60¢	No. 20	3.70¢
No. 12	2.90¢	No. 22	3.80¢

Sheet Iron from Store.

Black.

	One Pass, C. R. Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	₩ ℔, 3.70	3.75¢
Nos. 18 to 21	₩ ℔, 3.80	3.85¢
Nos. 22 to 24	₩ ℔, 3.90	3.95¢
Nos. 25 and 26	₩ ℔, 4.00	4.05¢
No. 27	₩ ℔, 4.10	4.15¢
No. 28	₩ ℔, 4.20	4.25¢

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ ℔ 10¼@11¢
Patent Planished	₩ ℔ A, 9¾¢; B, 8¾¢, net.

Galvanized.

	B. B.	
Nos. 10 to 16	₩ ℔, 12¢	10 to 500 ℔
Nos. 17 to 21	₩ ℔, 13¢	
Nos. 22 to 24	₩ ℔, 14¢	
Nos. 25 to 26	₩ ℔, 15¢	
No. 27	₩ ℔, 16¢	
No. 28	₩ ℔, 17¢	
No. 29	₩ ℔, 19¢	
No. 30	₩ ℔, 19¢	
No. 31	₩ ℔, 21¢	

36 in. 1¢ ₩ ℔ higher.

Foreign Steel from Store—

Best Cast	₩ ℔ 15 ¢
Extra Cast	₩ ℔ 18 @ 20 ¢
Swaged, Cast	₩ ℔ 16 ¢
Best Double Shear	₩ ℔ 15 ¢
Blister, 1st quality	₩ ℔ 13 ¢
German Steel, Best	₩ ℔ 10 ¢
1st quality	₩ ℔ 9 ¢
2d quality	₩ ℔ 8 ¢
Sheet Cast Steel, 1st quality	₩ ℔ 15 ¢
1st quality	₩ ℔ 14 ¢
2d quality	₩ ℔ 13 ¢
R. Mushet's "Special"	₩ ℔ 48 ¢
" " Annealed	₩ ℔ 75 ¢
" " "Titanic"	₩ ℔ 19 ¢
Robson's Choice XX Extra Best	₩ ℔ 35 ¢
Jessop Self Hardening	₩ ℔ 45 ¢
Seamans' "Nelson" Steel	40 ¢
Robson's "Soho" Special Self-Hardening	₩ ℔ 43 ¢

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.	Per ℔
Banca, Pigs	27 @27¼¢
Straits, Pigs	26¾@27 ¢
Straits in Bars	27¼@27¾¢

Tin Plates—

American Charcoal Plates.

Celland Grade:	
IC, 14 x 20	$8.25
IX, 14 x 20	9.75
Melyn Grade:	
IC, 14 x 20	7.75
IX, 14 x 20	9.25
Alloway Grade	
IC, 14 x 20	7.25
IX, 14 x 20	8.25

American Coke Plates—Bessemer—

IC, 14 x 20 ..108 ℔	$7.00@7.25
IX, 14 x 20	$7.75@8.00

American Terne Plates—

IC, 20 x 28	$12.50@13.00
IX, 20 x 28	14.25@14.75

Tin Boiler Plates, American—

IXX, 14 x 28 ..112 sheets	$16.00
IXX, 14 x 28 ..112 sheets	17.00
IXX, 14 x 31 ..112 sheets	18.50

Copper—

Duty: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₩ lb.

Ingot—

Lake	17¼@17¾¢
Ansonia grade Casting	16¾@17 ¢

Sheet and Bolt—

January 19, 1900. Net.

Prices, in cents per pound. Sheet 30 x 60.

Not wider than	Not longer than	And longer than	64 oz. & over, 50 lb. sheet, 30 x 60 and heavier.	32 oz. to 64 oz. 25 to 50 lb.	24 oz. to 32 oz. 18¾ to 25 lb.	16 oz. to 24 oz. 12½ to 18¾ lb.	14 oz. and 15 oz. 11 to 12½ lb.	12 oz. and 13 oz. 9¾ to 11 lb.	10 oz. and 11 oz. 7¾ to 9⅝ lb.	8 oz. and 9 oz. 6¼ to 7¾ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	21	21	21	21	22	23	24	27	30
30	96	72	21	21	21	21	22	24	27	30	
30	.....	96	21	21	21	21	23	27			
36	72	.....	21	21	21	21	23	25	28	31	
36	96	72	21	21	21	23	23	27	30		
36	120	96	21	21	21	23	24				
36	.....	120	21	21	22	23					
48	72	.....	21	21	22	23	25	28	31		
48	96	72	21	21	22	24	26	29			
48	120	96	21	21	23	25	29				
48	.....	120	21	22	24	27					
60	72	.....	21	22	22	24	27	32			
60	96	72	21	21	23	25	30				
60	120	96	21	22	24	27					
60	.....	120	21	23	25	29					
72	96	.....	21	22	24	29					
72	144	96	21	23	26	31					
72	.....	144	22	24	29						
108	120	.....	22	24	30						
108 wider than 108	.....	120	24	25							
	144	.....	25	27							
	.....	144	26	29							

Rolled Round Copper, ¾ inch diameter and over, ₩ ℔ 21¢.

Circles, Segments and Pattern Sheets, 3¢ ₩ ℔ advance over price of sheet Copper required to cut them from.

Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ ℔ over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 oz. ₩ square foot, 2¢ ₩ ℔ over the foregoing prices.

All Polished Copper, 20 in. wide and under, 1¢ ₩ ℔ advance over the price for Cold Rolled Copper.

All Polished Copper, over 20 in. wide, 2¢ ₩ ℔ advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₩ ℔ more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₩ ℔	25¢
12 oz. and up to 14 oz. to square foot, ₩ ℔	33¢
10 oz. and up to 12 oz., ₩ ℔	34¢
Lighter than 10 oz., ₩ ℔	31¢

Circles less than 8 in. diameter, 3¢ ₩ ℔ additional.

Circles over 13 in. diameter are not classed as Copper Bottoms.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.

List March 2, 1900.

Nos.	0000 to 8 Base	9 and 10	11 and 12	
		½¢	¾¢ ₩ ℔ adv.	
Nos.	13	14	15	16
	¾¢	¾¢	1¢	1¼¢ ₩ ℔ adv.
Nos.	17	18	19	20
	1¼¢	2¢	2¼¢	2¾¢ ₩ ℔ adv.

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.

Feb. 6, 1899. Net. Outside Diameter.

Stubs' W.G.	B. & S. W.G.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	3- 9	...	.....	...	.....	33	31	30	29	28	27	25	24
12	10	...	.....	37	35	33	31	30	29	28	27	25	24
13	11	...	.....	37	35	33	31	30	29	28	27	25	24
14	12	...	41	37	35	33	31	30	29	28	27	25	24
15	13	...	42	38	36	33	32	31	30	29	28	26	25
16	14	...	43	39	37	34	33	32	31	30	29	26	25
17	15	...	44	40	38	35	34	33	32	31	30	27	26
18	16	61	46	42	39	36	35	34	33	31	30	28	27
19	17	62	47	43	40	37	36	35	34	33	32	30	29
20	18-19	64	49	44	41	39	38	37	36	35	34	32	31
21	20	66	51	46	43	41	40	39	38	37	36	35	34
22	21	71	56	48	44	42	41	40	39	38	37	37	36
23	22	76	61	50	46	44	43	42	41	40	39	39	39
24	23	81	66	53	48	46	45	44	43	43	40	40	41
25	24	86	71	56	51	49	47	46	45	43	43	44	45

Copper Bronze and Gilding Tube, 3¢ ₩ ℔ additional

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
36	32	29	27	21	21	21	21	21	21	23	23	25	27	28	₩ ℔

Copper, Bronze or Gilding Tubes, 3¢ ₩ ℔ additional

Brazed Brass Tubing.

(*To No. 19, inclusive.*) Feb. 26 1898

Brown & Sharpe's gauge standard.

	Per ℔.
Plain Round Tube, ¼ in. up to 2 in.	$0.35
" " ⅝ " ¾ "	.36
" " ½ " ⅝ "	.38
" " ⅜ " ½ "	.41
" " 5-16 " ⅜ "	.48
" " ¼ " 5-16 "	.65
" " 3-16 " ¼ "	1.00
" " ⅛ " 3-16 "	1.50
Smaller than ¼ inch	Special
3 inch and larger	.40
Over 3 inch to 3½ inch, inclusive	.45
Over 3½ inch	.50

Bronze and Copper, advance on Brass List, 3 cents.

Discount from list 5 | 35%

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass Wider than and including	in. 2 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24	in. 24 26
To No. 20 inclusive	.22	.23	.25	.27	.29	.31	.33	.36
Nos. 21 22, 23 and 24	.22	.24	.26	.28	.30	.32	.34	.37
Nos. 25 and 26	.23	.24½	.27	.29	.31	.33	.35	.38
Nos. 27 and 28	.23	.25	.28	.30	.32	.34	.36	.39

Common High Brass Wider than and including	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40
To No. 20, inclusive	.39	.42	.46	.50	.55	.60	.65 *
Nos. 21, 22, 23 and 24	.40	.43	.47	.51	.56	.61	.68
Nos. 25 and 26	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28	.42	.45	.49	.53	.58	.65	.75

* Special prices not less than 80 cents.

Add ¼¢ ₩ ℔ additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List 20%

Wire in Coils. List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gilding bronze and copper
All Nos. to No. 10, inclusive	$0.23	$0.27	$0.28
Above No. 10 to No. 16	.23½	.27½	.28½
No. 17 and No. 18	.24	.28	.32
No. 19 and No. 20	.25	.29	.33
No. 21	.26	.30	.34
No. 22	.27	.31	.35
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.34	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.62
No. 31	.51	.55	.67
No. 32	.55	.59	.73
No. 33	.59	.63	.84
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2.00	2.00	3.25
No. 40	2.60	2.60	5.75

Discount, Brass Wire, 20%; Copper Wire, NET. List November 16, 98.

Spring Wire, 2¢ ₩ ℔ advance.

Tobin Bronze—

Straight, but not turned, Rods, ⅝ to 3 in. diameter, ₩ ℔, net 30¢

Finished Piston Rods, ⅝ to 2¼ in. diameter, ₩ ℔ net 21¢

Other sizes and extreme lengths, special prices.

Spelter—

Duty: In Blocks or Pigs, 1¢ ₩ ℔

Western Spelter 4.45@4½¢

Zinc.

Duty: Sheet, 2¢ ₩ ℔.

600 ℔ casks 6¾¢ | Per ℔ 7¾¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₩ ℔. Pipe and Sheets, 2½¢ ₩ ℔.

American Pig	4.60@4.62½¢
Bar	5½@5¾¢
Pipe	6½c.....20% off
Tin Lined Pipe	12½¢.....20% off
Block Tin Pipe	40 ¢.....20% off
Sheet Lead, full rolls	7¼¢.....20% off
Sheet Lead, cut	7¾¢.....20% off
Old Lead in exchange, 4½¢ ₩ ℔.	

Solder.

½ & ½, guaranteed	18½@18¾¢
No. 1	14½@16¾¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₩ lb.

Cookson	₩ ℔ 10½@11¢
Hallett's	₩ ℔ 8½@9¼¢
U. S.	₩ ℔ 8½@9 ¢

Aluminum—

Duty: Crude, 8¢ ₩ ℔. Plates, Sheets, Bars and Rods, 13¢ ₩ ℔.

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:

Small lots	₩ ℔ 37¢
100-℔ lots	₩ ℔ 35¢

No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:

Small lots	₩ ℔ 34¢
100-℔ lots	₩ ℔ 33¢

Aluminum Sheet, B. & S. gauge. 50 ℔ or more

Wider than	6-in.	14-in.	24-in.
And including	14-in.	24-in.	30-in.
	₩ ℔.	₩ ℔.	₩ ℔
Nos. 13 to 19	$0.42	$0.44	$0.47
No. 20	.44	.46	.49
Nos. 21 to 23	.46	.48	.51
No. 24	.48	.50	.53
No. 25	.47	.51	.54
No. 26	.47	.54	.59
No. 27	.48	.57	.62
No. 28	.48	.57	.64
No. 29	.49	.60	.69
No. 30	.50	.64	.77

Note.—Lots of less than 50 ℔ 5¢ ₩ ℔ extra.

Aluminum Wire, B. & S. Gauge.

Larger than No. 9	₩ ℔ 40¢	No. 15	₩ ℔ 48¢
No. 9 to No. 10	₩ ℔ 40½¢	No. 17	₩ ℔ 50¢
No. 11	₩ ℔ 41 ¢	No. 18	₩ ℔ 55¢
No. 12	₩ ℔ 41½¢	No. 19	₩ ℔ 60¢
No. 13	₩ ℔ 42 ¢	No. 20	₩ ℔ 65¢
No. 14	₩ ℔ 43½¢	No. 21	₩ ℔ 85¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper	₩ ℔ 14½¢
Light and Tinned Copper	₩ ℔ 12¾¢
Heavy Brass	₩ ℔ 9 ¢
Light Brass	₩ ℔ 7¼¢
Lead	₩ ℔ 4 ¢
Tea Lead	₩ ℔ 3½¢
Zinc	₩ ℔ 2½¢
No. 1 Pewter	₩ ℔ 18½¢
No. 2 Pewter	₩ ℔ 9 ¢
Tin Plate Scrap	₩ ton $8.00
Wrought Scrap Iron	₩ gross ton $10 50@11.00
Heavy Cast Scrap	₩ gross ton $10 00@10.25
Stove Plate Scrap	₩ gross ton $6.75@7.00
Burnt Iron	₩ gross ton $5.00@5.50